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## Conversion Recommendations – Vivaro

### 1 Conversion limitations for Platform chassis

#### • Wheel base extension

It is not generally advisable to alter the wheel base. If, however, it is necessary to lengthen the wheel base, the following recommendations must always be observed:

- The cutting area has been determined taking into consideration the existing components, i. e. exhaust, crossmember and reinforcements and is located at a distance of 536 mm from the rear panel of the cab.
- The maximum permissible wheel base extension is 300 mm.
- Side members and reinforcements must overlap by at least 2 x 150 mm on each side, extension of the side sills must be at least 2 x 100 mm. The overlaps must be swaged.
- The join must be made by means of at least two rows of shielded plug welding (on both webs of the side members).
- The recommended material is specified in the survey of components necessary for wheel base extension (see page 6).
- Elongateing the hydraulic brake lines is prohibited. A longer hydraulic line must be installed.

#### • Replacing brake lines

The vehicle brake lines must be replaced by brake lines of the same diameter, flange profile and a union nut of the same size. The shape of the new brake lines must correspond to that of the old ones.

#### **Important!**

Do not route brake lines between wiring harnesses when replacing.

#### • Partial replacement of brake lines

Top up the brake fluid reservoir to the MAX mark and close with sealed screw cap. The separation point must be near a fastening point – clips, clamps, etc. Only one separation point is permissible for each brake line. The replacement is made from the respective wheels to the separation point or from the brake master cylinder to the separation point.

#### **Important!**

Do not bend remaining brake lines.

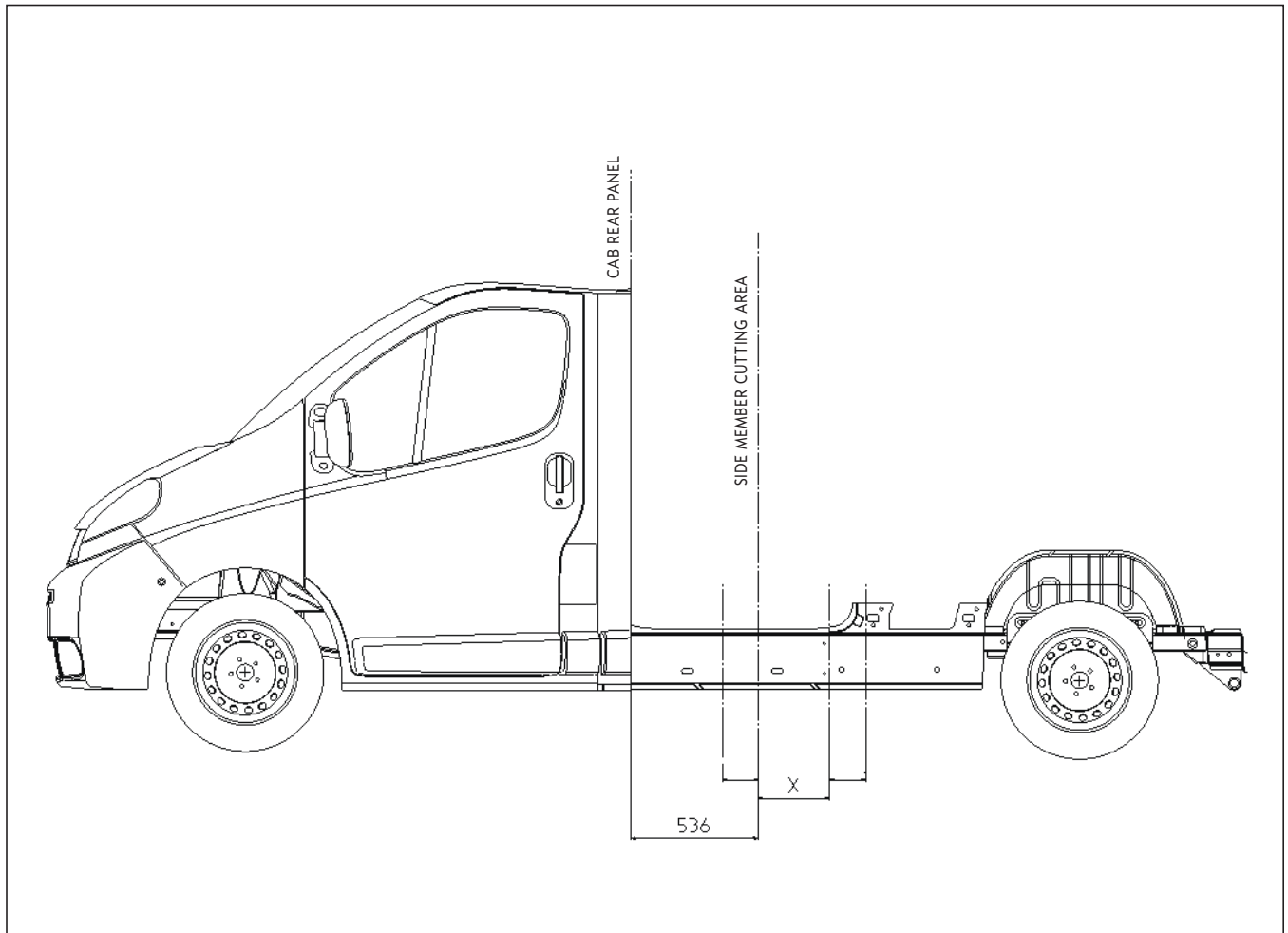
Cut appropriate length for the new brake line section, form flange and bend in accordance with the part to be replaced. In order to avoid changes in pipe cross section, a pipe bender must be used. Subsequently, bleed the brake system and check for leaks.



- **Parking brake**

The centre parking brake cable must be replaced by a longer cable with a diameter of 2.8 mm (1x19+0). The twist must run in the same direction as that of the primary cable.

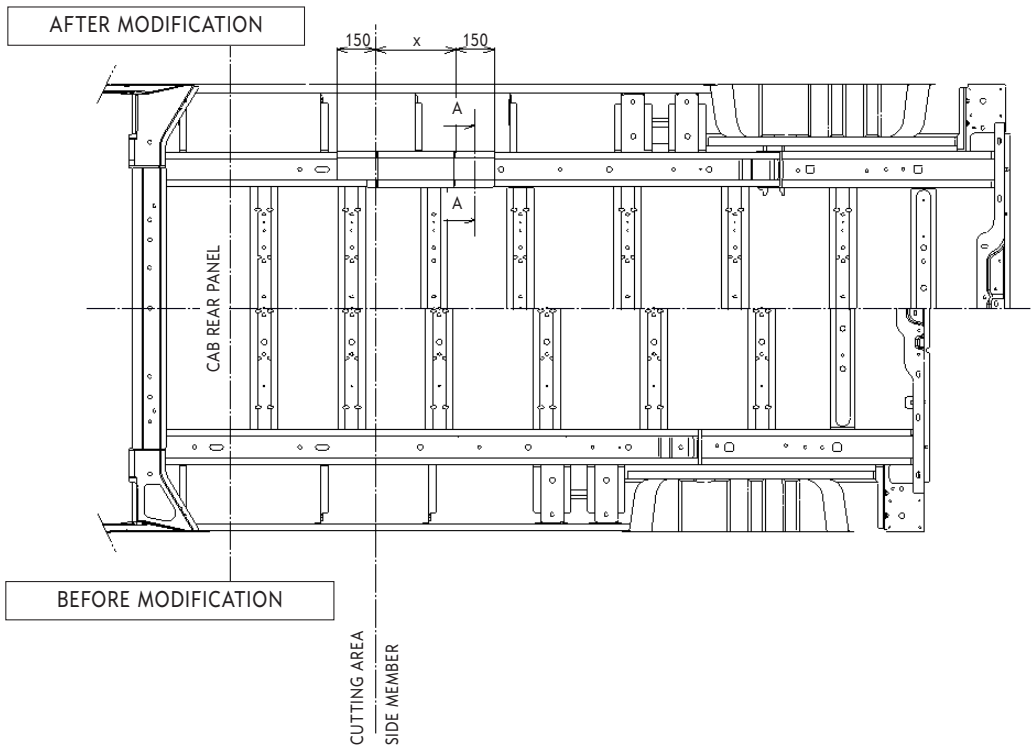
The cable must have a tensile strength of at least 500 daN and conform to ECE 13 standard.



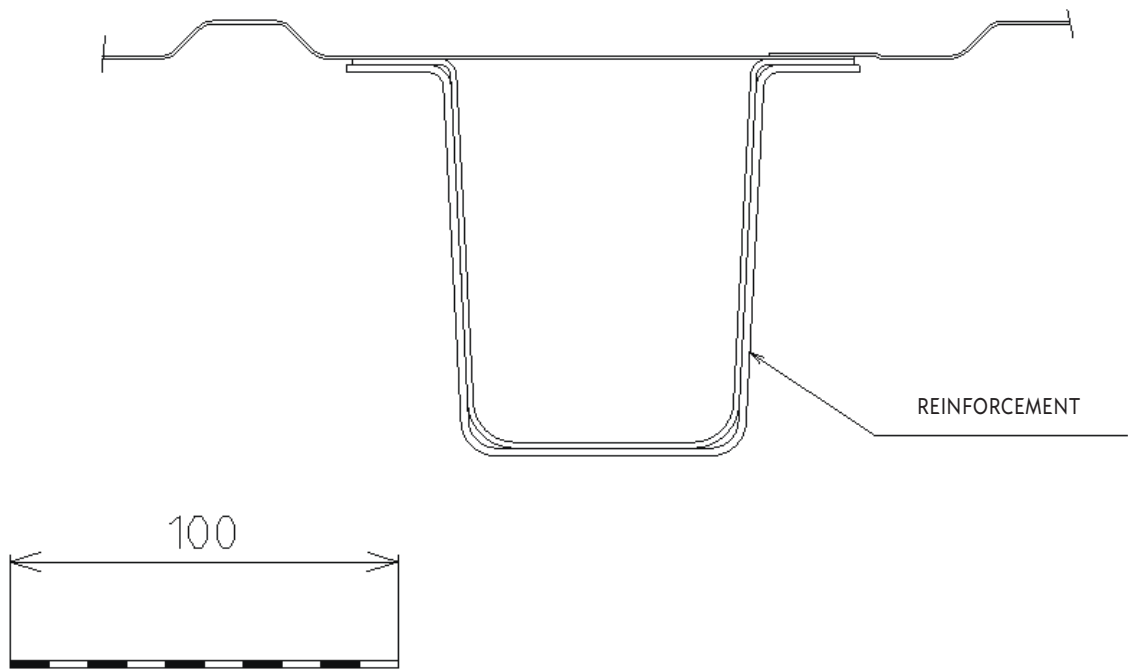


**Platform chassis**

Plan view (without floor panel)



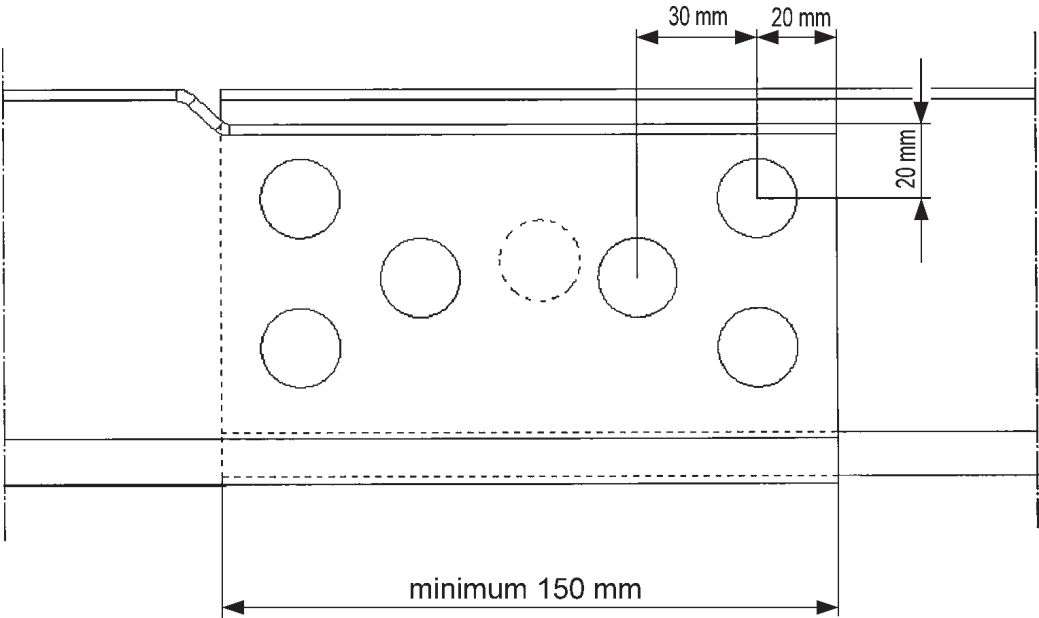
**Section A - A**





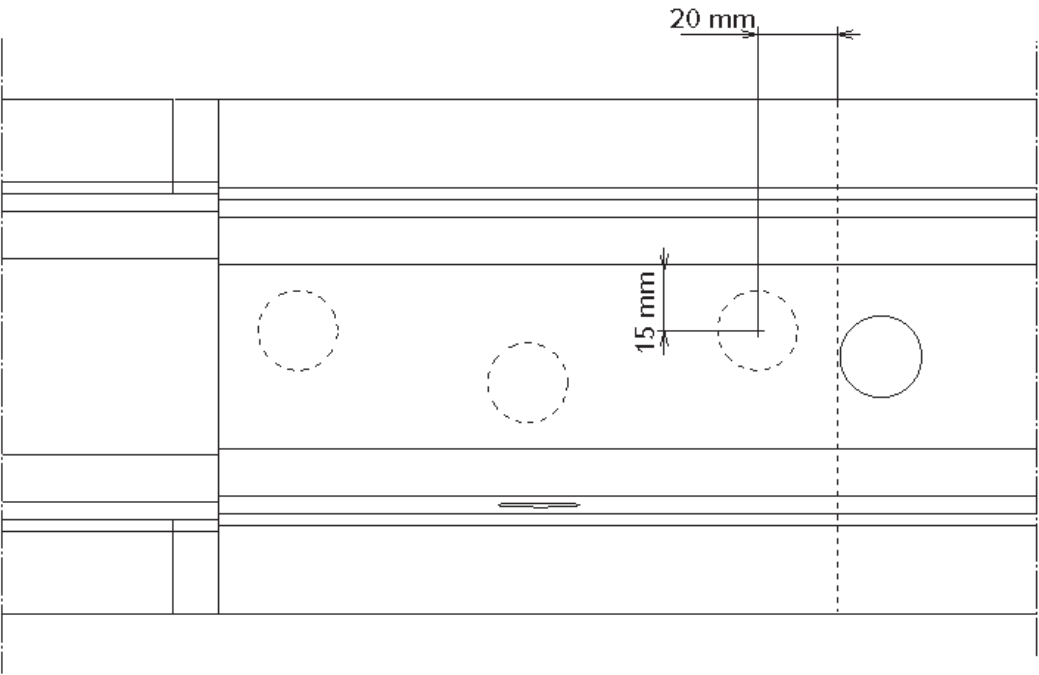
Covering the side sill and weld seams and Ø 20 mm plug welding

Side view



Covering the side member and weld seams and Ø 20 mm plug welding

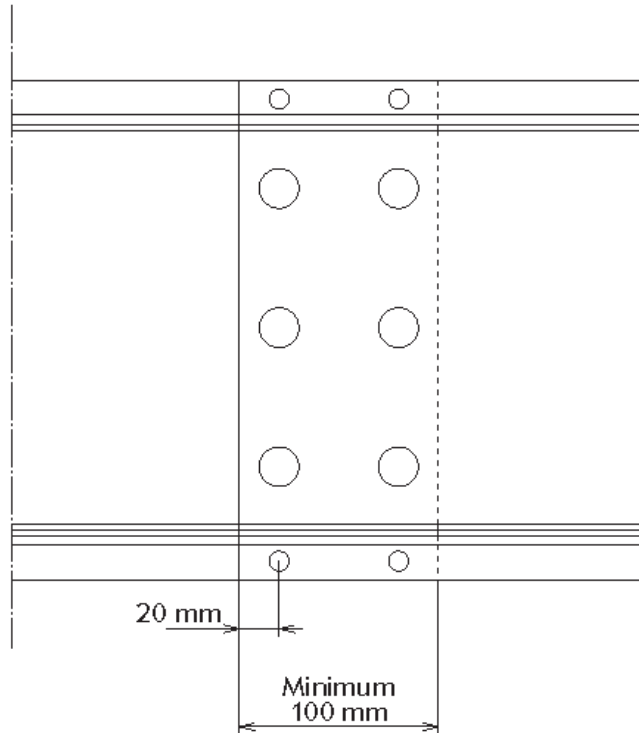
Top view





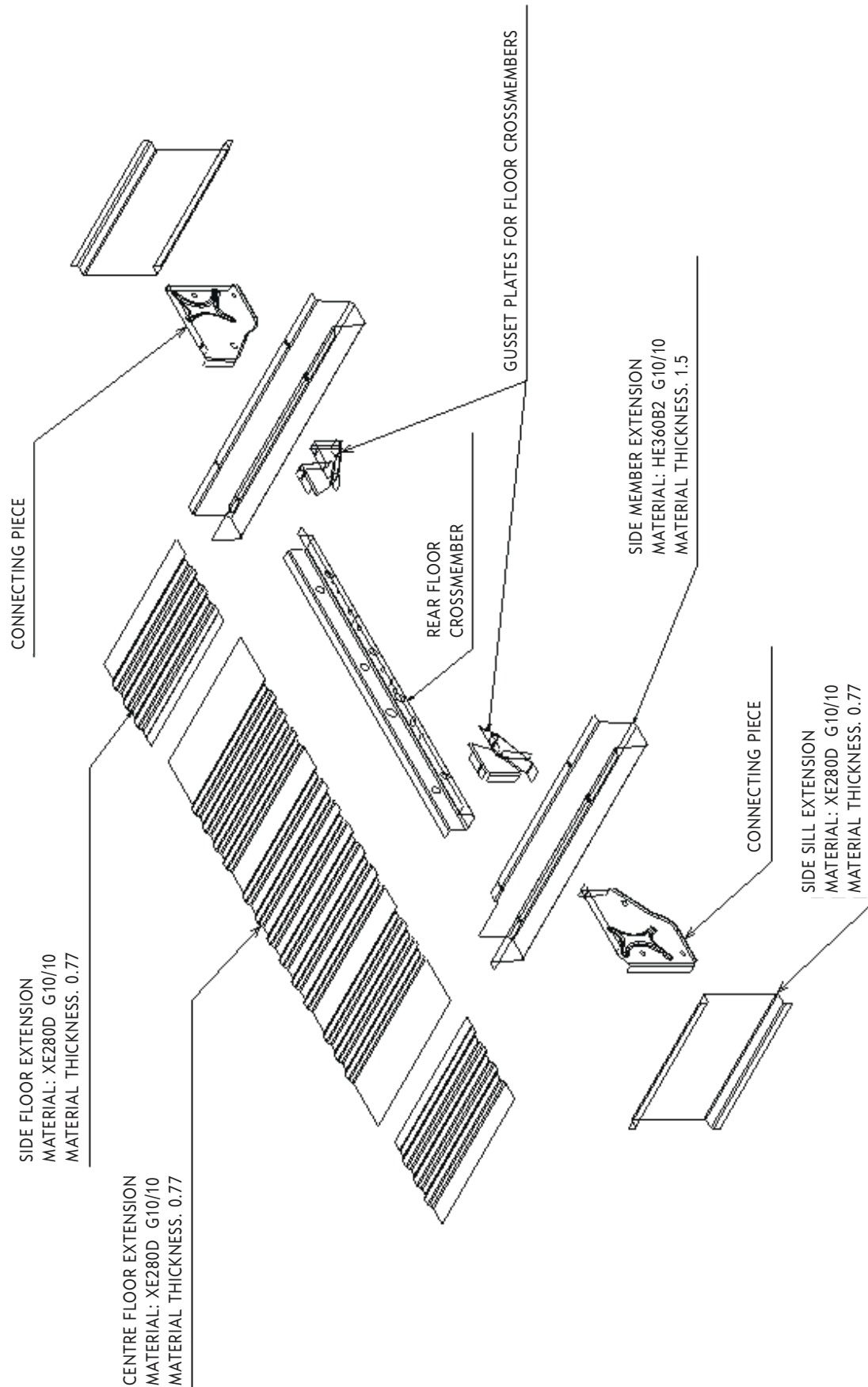
**Covering the side sill and weld seams and plug welding in accordance with Item Ø 20 mm on the surface and Ø 10 mm on the wings and flanks**

Side view





## Components for wheel base extension





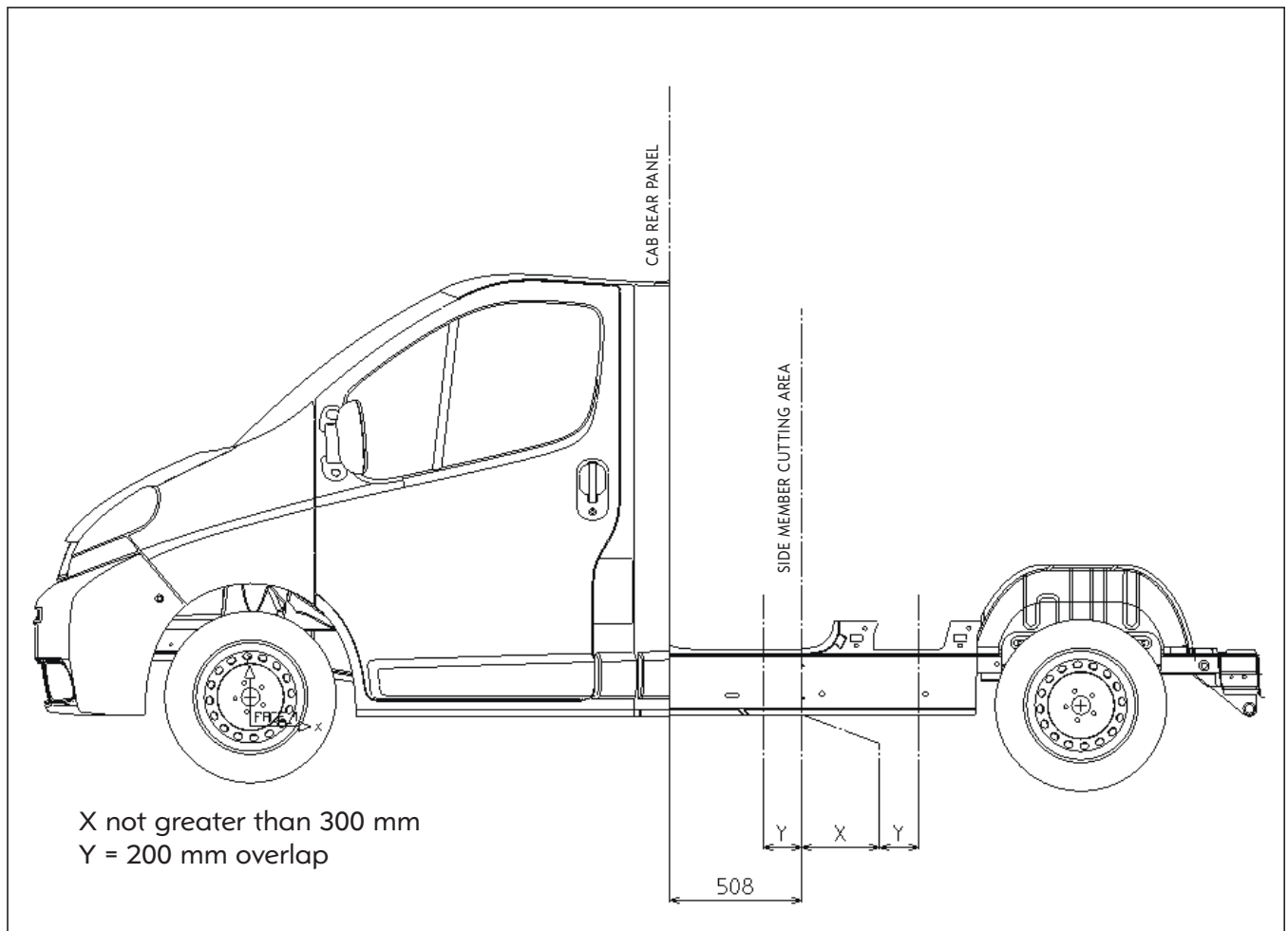
- **Wheel base shortening**

**Note:** It is forbidden to lengthen the rear overhang if the wheel base is shortened as this impairs the tracking stability and braking performance.

It is generally not advisable to make changes to the wheel base. If, nevertheless, it is necessary to change the wheel base, the following recommendations must always be observed:

- The cutting area has been determined taking into consideration the existing components, i. e. exhaust, crossmember and reinforcements and is located at a distance of 508 mm from the rear panel of the cab.
- The maximum permissible wheel base shortening is 300 mm.
- The overlap of the side members must be at least 2 x 200 mm.
- The join must be made by means of at least two rows of shielded plug welding (on both webs of the side members).
- The recommended material is specified in the survey of the components necessary for wheel base shortening (see page 9).

**For information on replacing or partial replacement of brake lines, see page 1.**

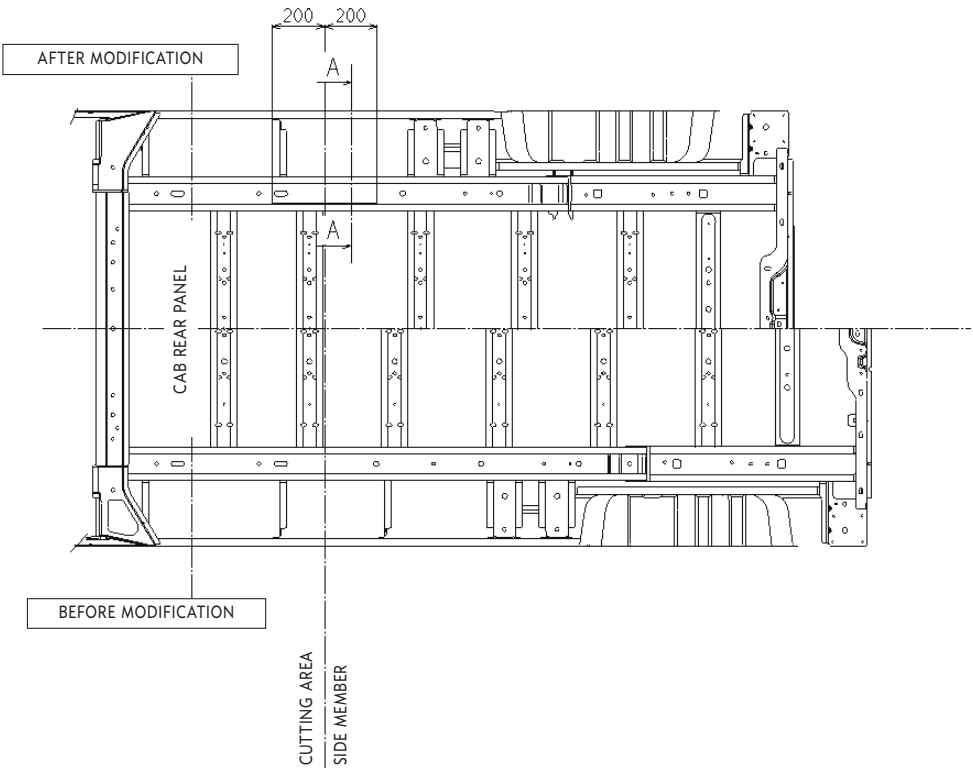




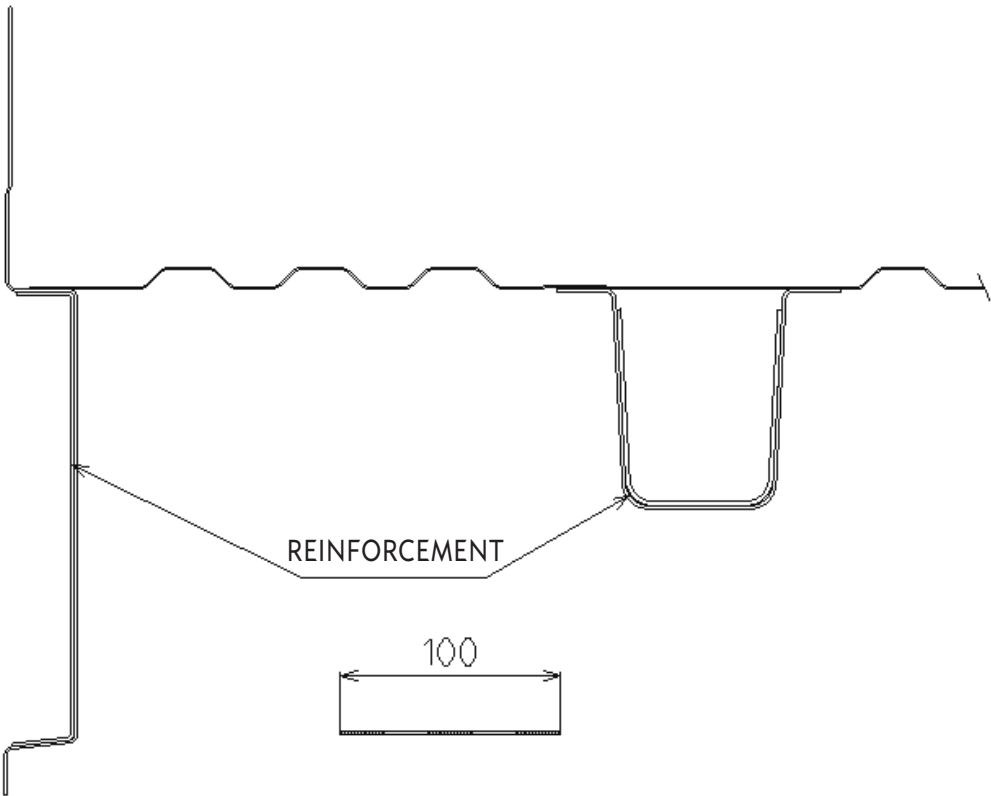


**Platform chassis**

Plan view (without floor panel)



**Section A - A**

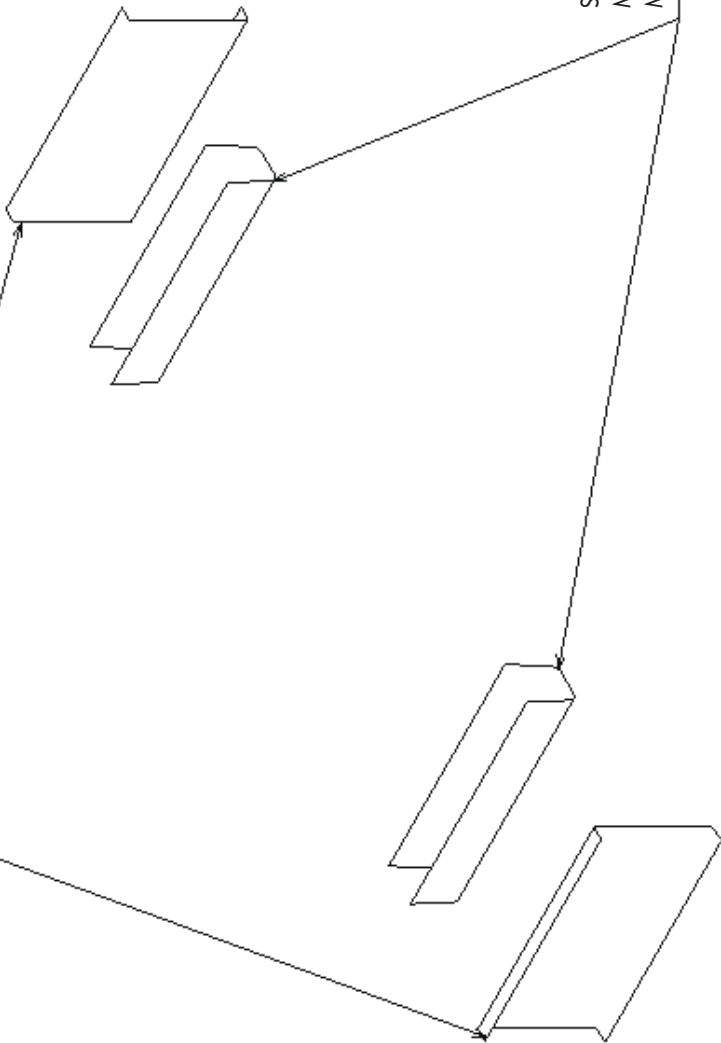




Components for wheel base shortening

END PANEL REINFORCEMENT  
MATERIAL: XE280D G10/10  
MATERIAL THICKNESS 1.17

SIDE MEMBER REINFORCEMENT  
MATERIAL: HE360B2 G10/10  
MATERIAL THICKNESS 1.5





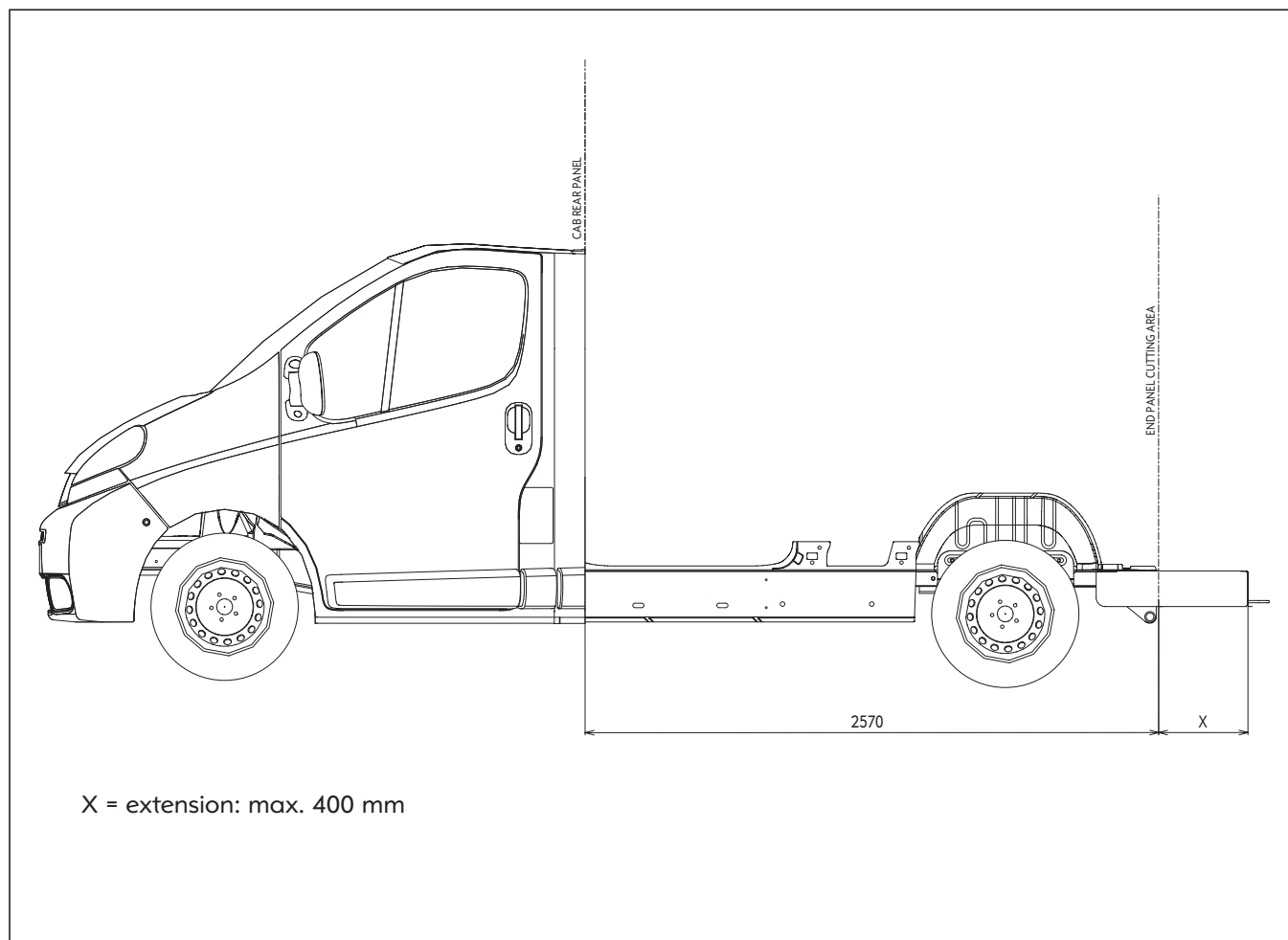
### • Rear overhang

Modification of the rear overhang leads to a significant change in the axle-load distribution. Axle loads must not exceed or fall below the maximum and minimum values.

It is generally not advisable to change the rear overhang. If, nevertheless, the overhang must be changed, the following recommendations must always be observed:

- The cutting area has been determined taking into consideration the installation position of the existing crossmember and reinforcements.
- The maximum permissible extension of the overhang is 400 mm.
- The joins must be made by means of shielded plug welding (floor extension).
- The new assembly must be bolted onto the trailer hitch fastening points on the rearmost cross-member with 10 bolts (M12).
- The recommended material is specified in the survey of the components required for overhang extension (see page 13).
- A new towing eye must be attached.

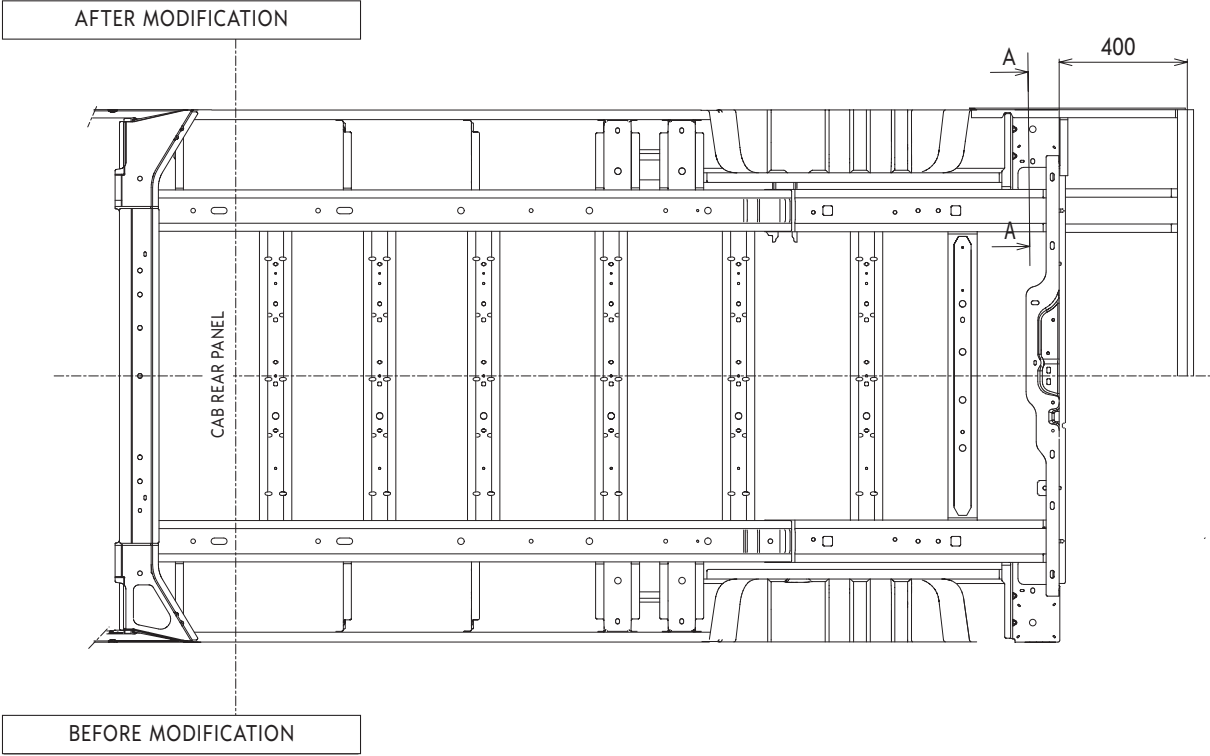
**Note: If the overhang is extended to the maximum permissible value, the spare wheel carrier must be offset in order to ensure unobstructed access to the spare wheel.**





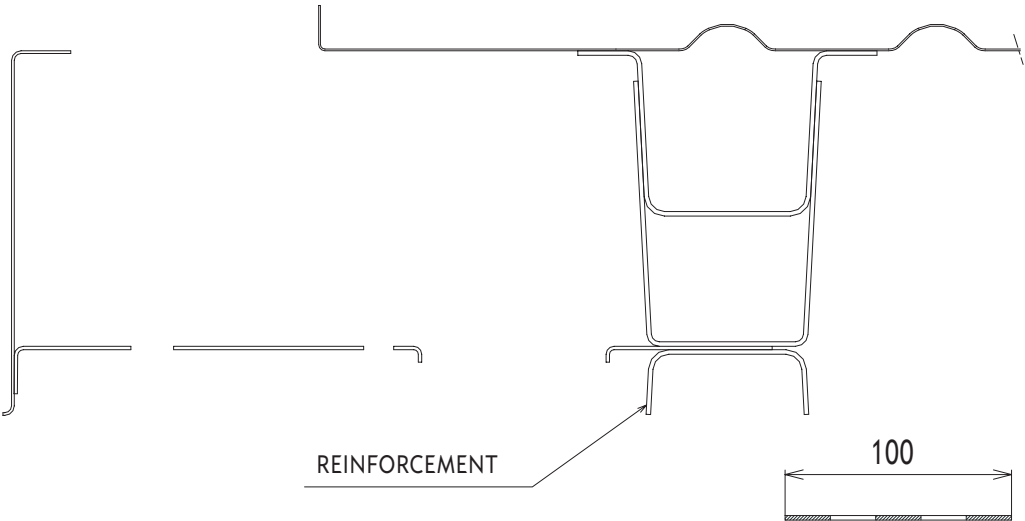
**Platform chassis**

Plan view (without floor panel)

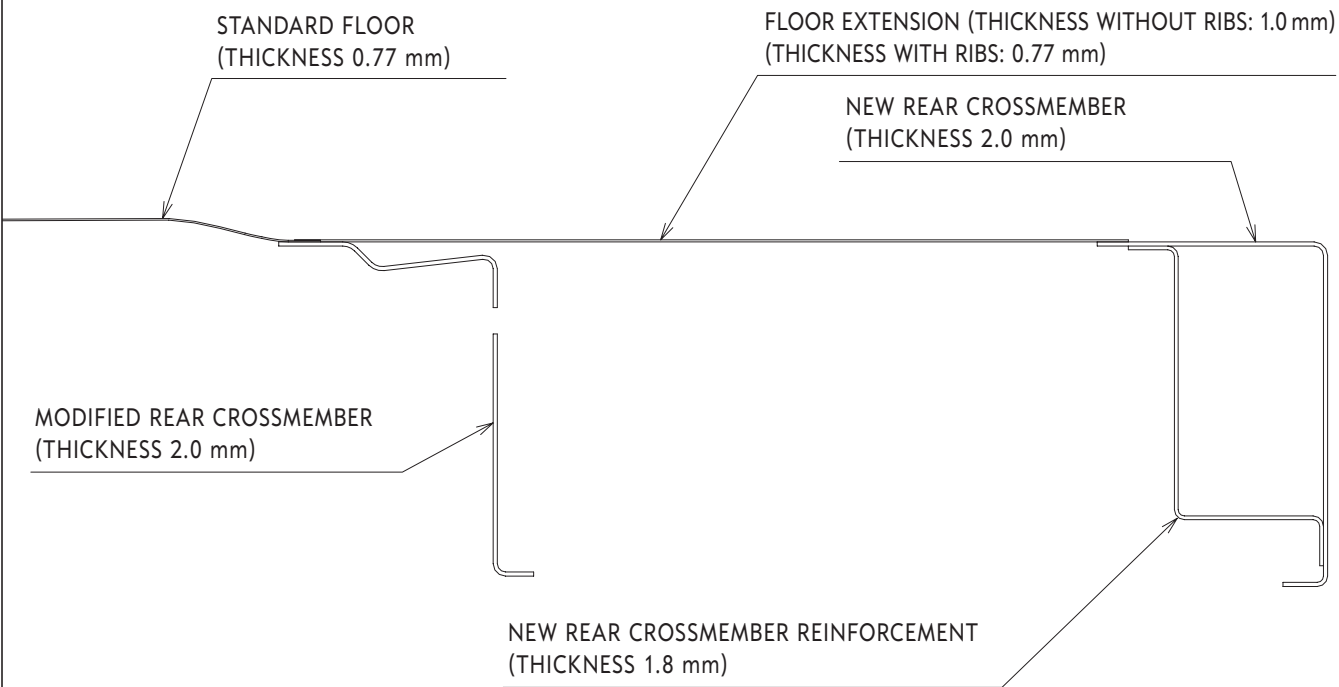




Section A - A

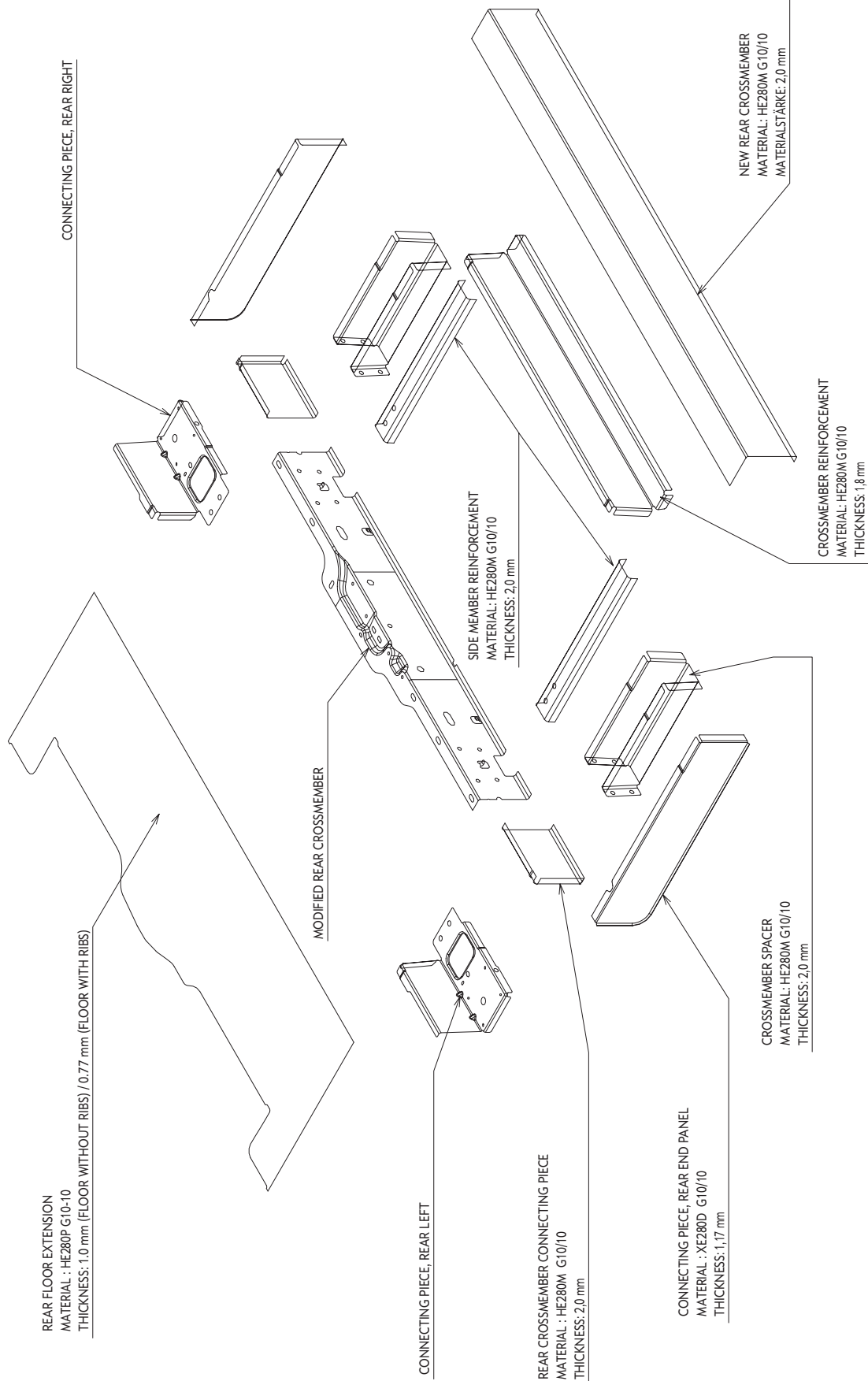


Section through the longitudinal axis of vehicle in rear overhang area





## Components for rear overhang extension





- **Additional corrosion protection standards**

- **In general**

Surfaces and paintwork must be repaired if any modifications are made to the body (drilling, welding, cutting, etc.). The relevant painting processes vary according to the type of component:

Process	Outwardly-visible removable component in body colour	Outwardly-visible modified component in body colour	Outwardly-visible modified component not in body colour	Outwardly invisible modified component not in body colour
Sheet metal	Material specification identical to original component (G 10/10 or EZ 10/10), with cataphoresis immersion painting			
Weld seam flush and butting ends rounded		●	●	●
Anti-corrosion primer on all bare metal surfaces		●	●	●
2 component filler primer on all bare metal surfaces in butting areas		●		
Sand filler primer		●		
Dry sand (P400) or wet sand (P800) primer		●		
Dry sand (P400) or wet sand (P800) primer, finish all angles with buffer (grey) in all visible areas	●	●		
2 component filler primer	● (components to be painted not sanded)	● (components to be painted not sanded)	● (Dry sand with buffer (red))	● (Dry sand with buffer (red))
Sealing mastic (1)	●	●	●	●
Stone impact protection compound (1)	●	●	●	●
Underseal (2)			●	
Paint	●	●		
Cavity sealing (1)	●	●	●	●
Cavity filler	As for standard vehicles			

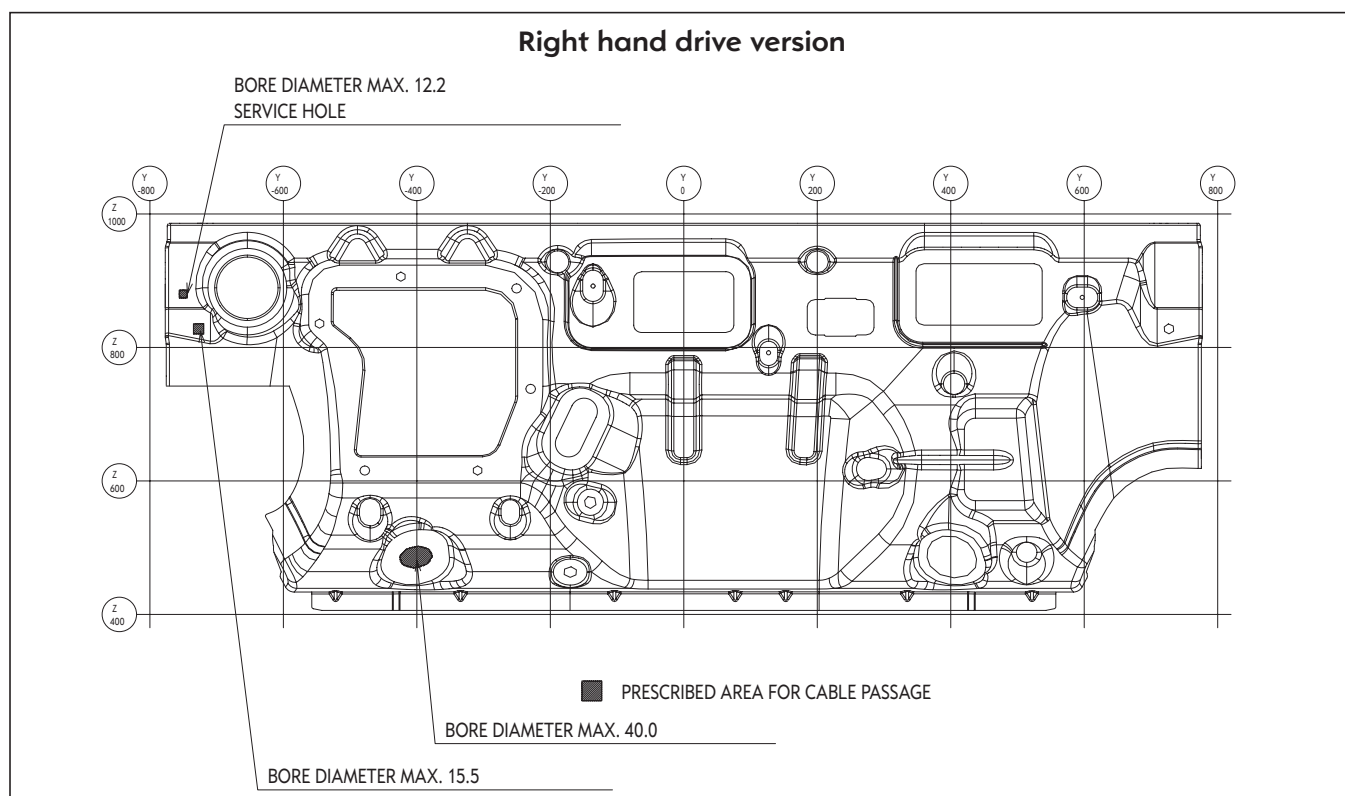
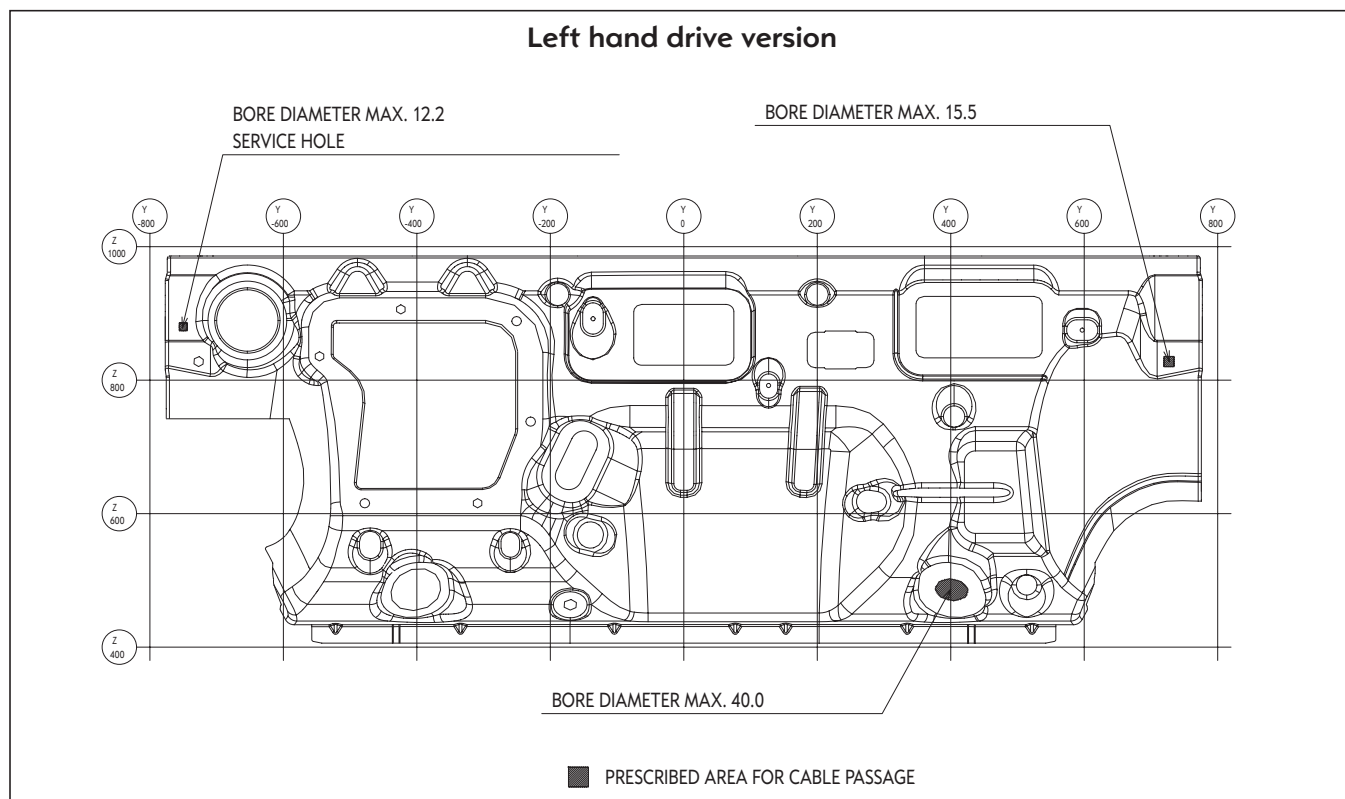
1 To be applied to modified areas of standard vehicles

2 To be applied to modified areas of standard vehicles and for all additional underbody components



## 2 Conversion Guidelines

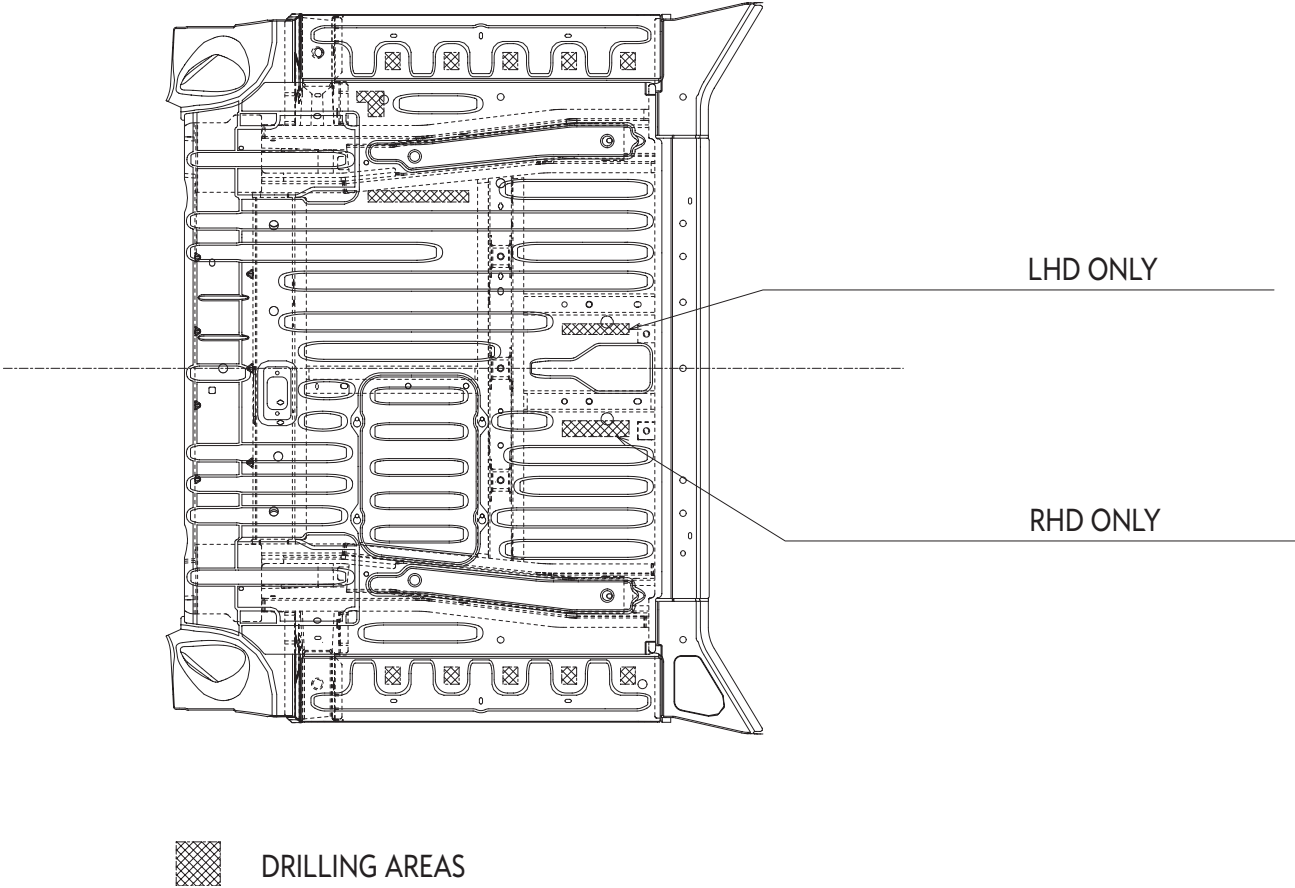
- Drilling areas bulkhead





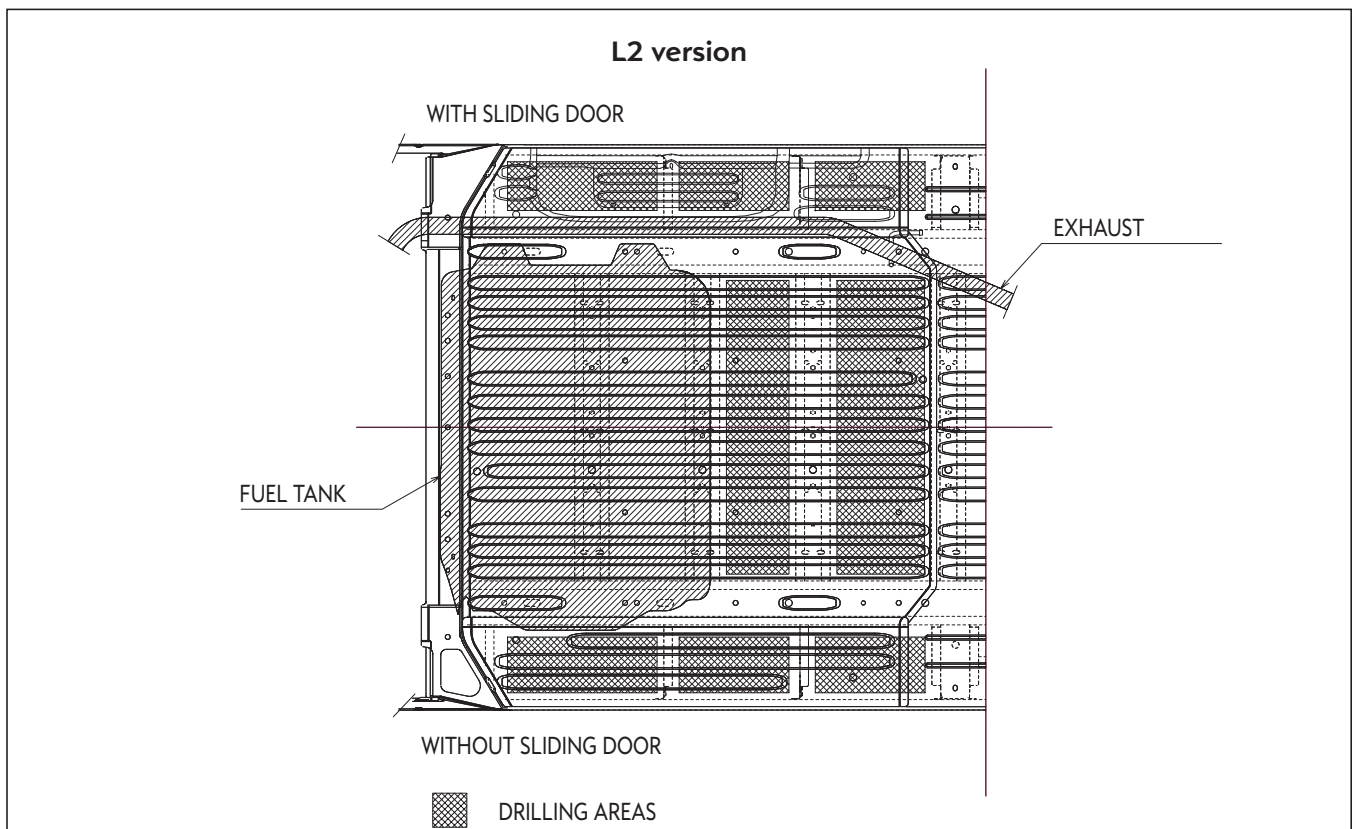
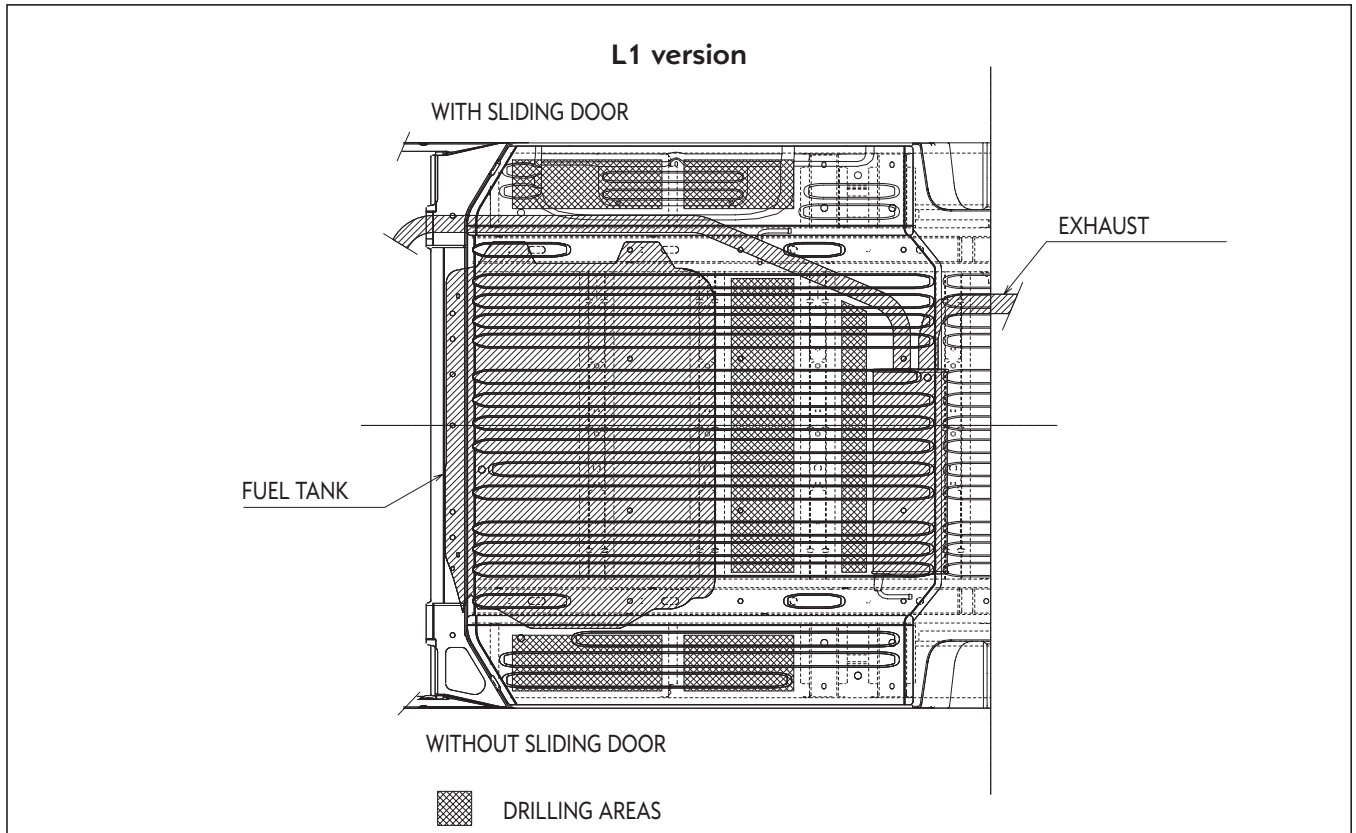


Cab floor panel





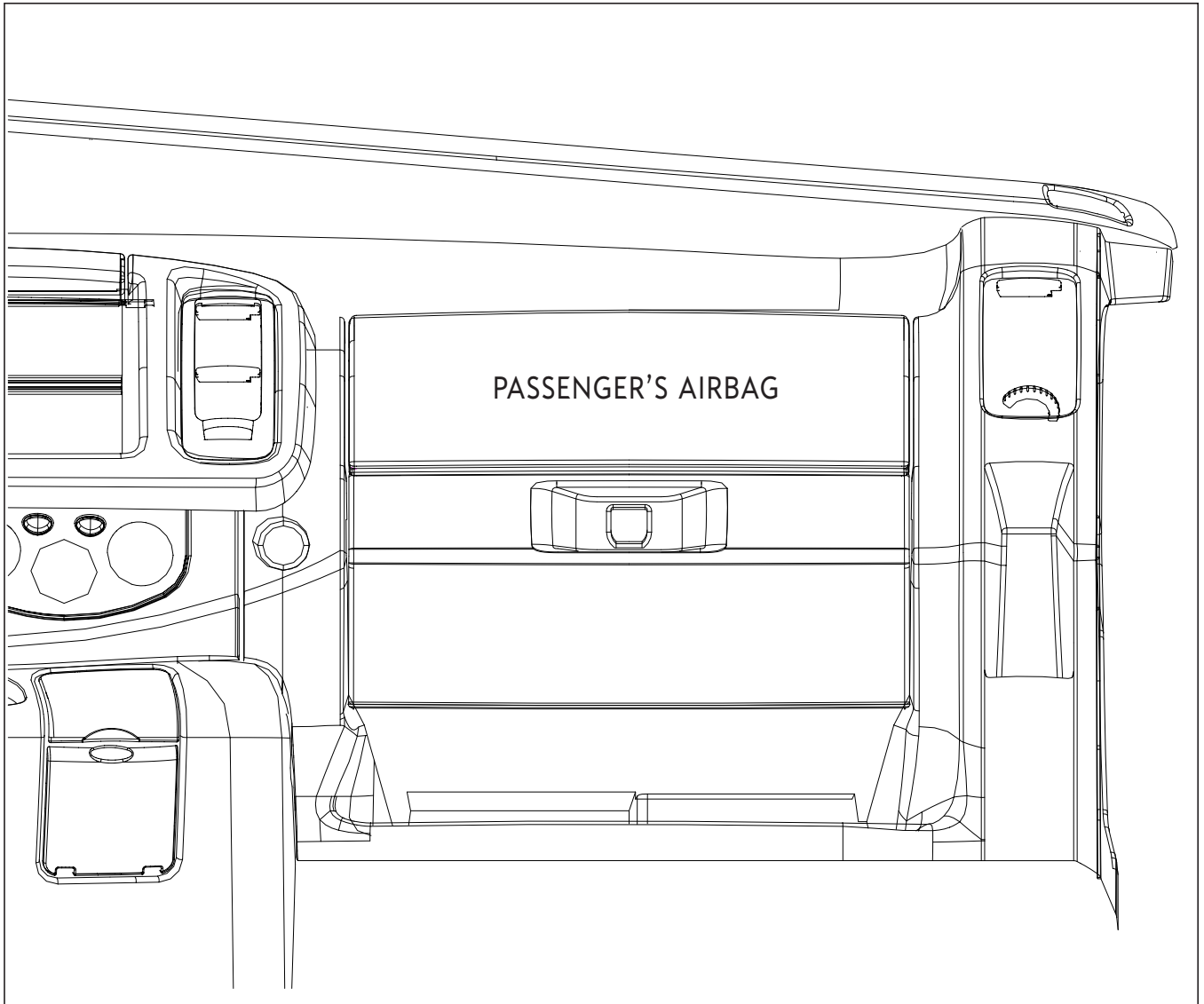
- Van floor panel – side sliding door area





- **Instrument panel**

In addition to the usual safety precautions, the following points must also be taken into account. The function of the airbags must not be impaired and no objects must obstruct the airbag deployment area.



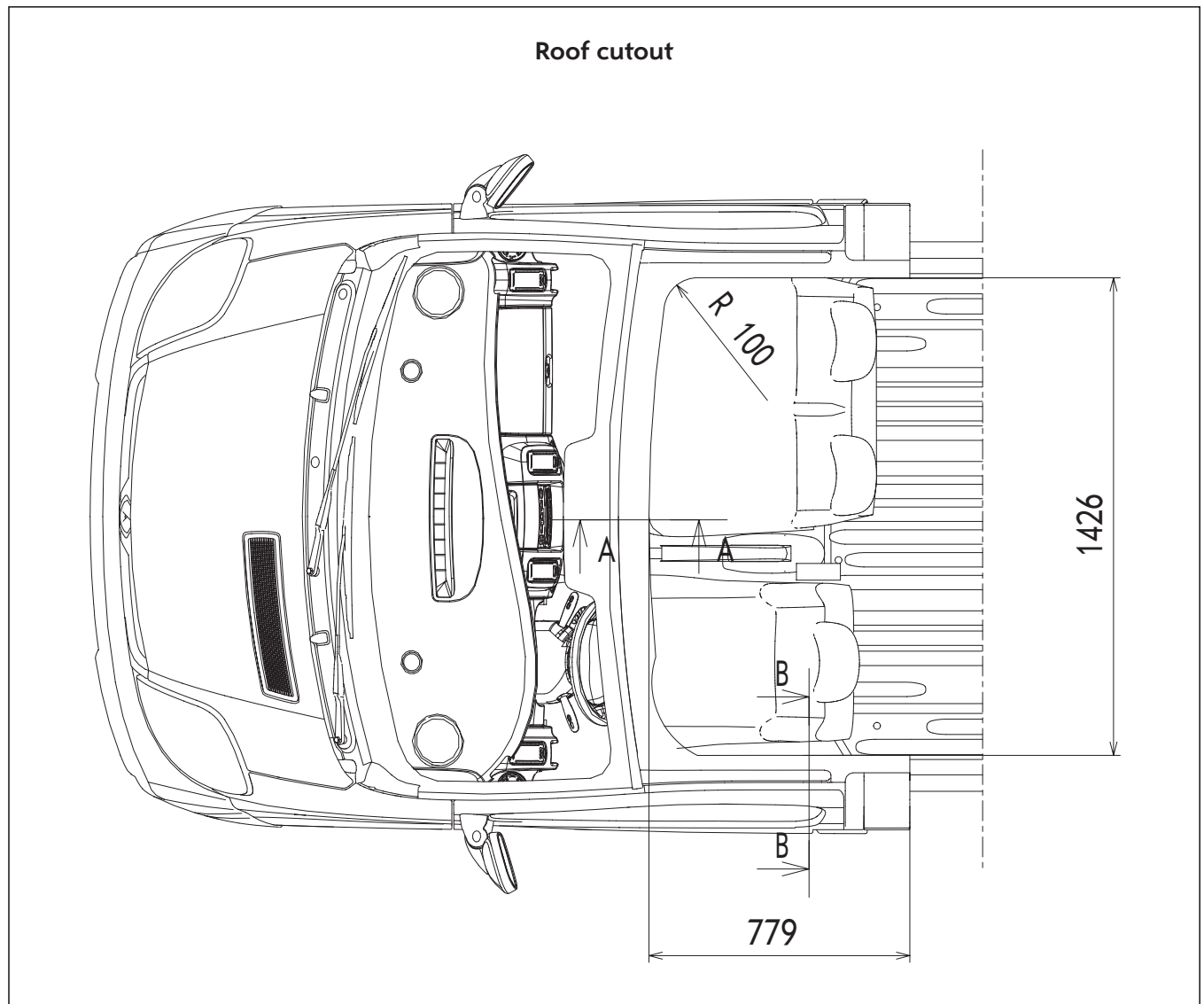


- **Cutout areas**
- **Platform chassis roof cutout**

Brief information regarding the position of the cutout and the operations to be performed are given below.

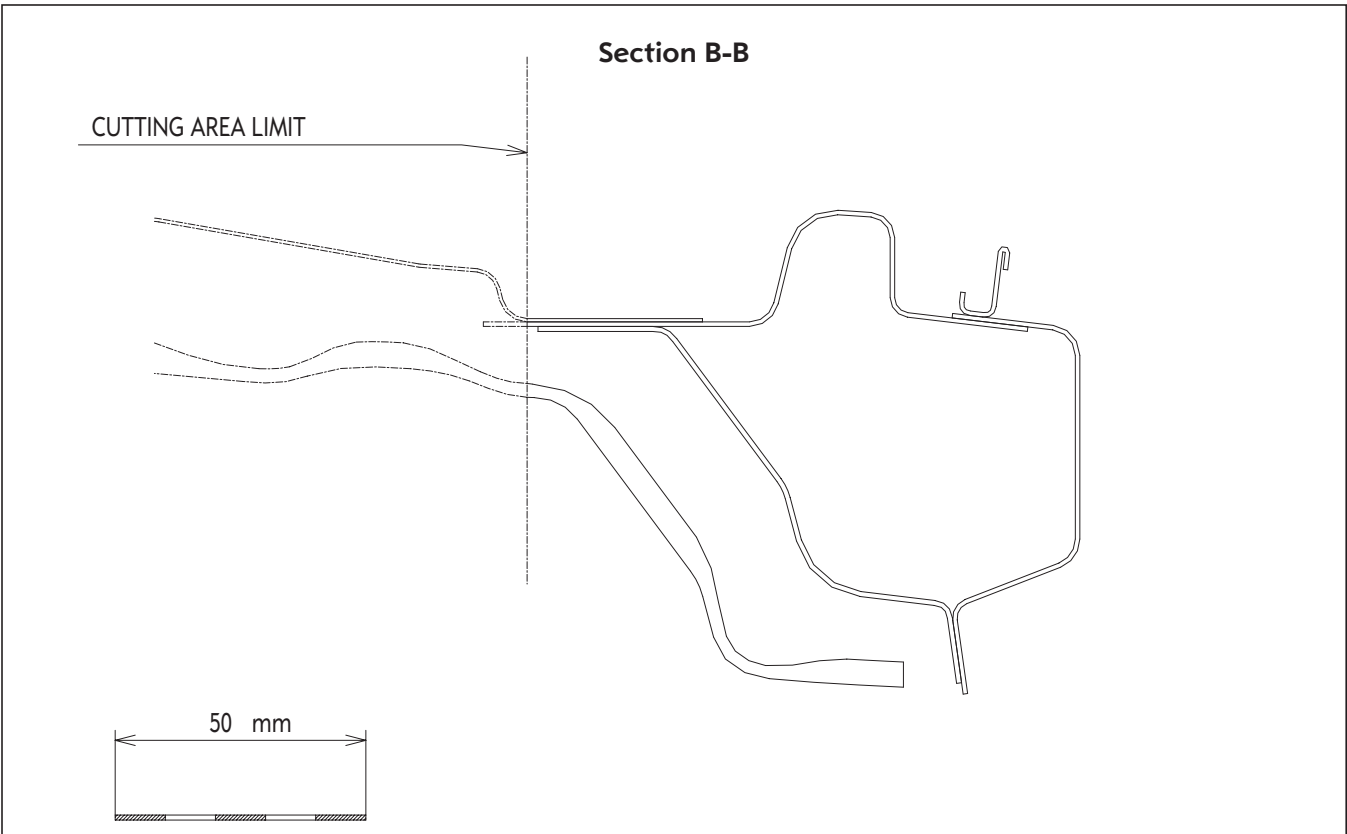
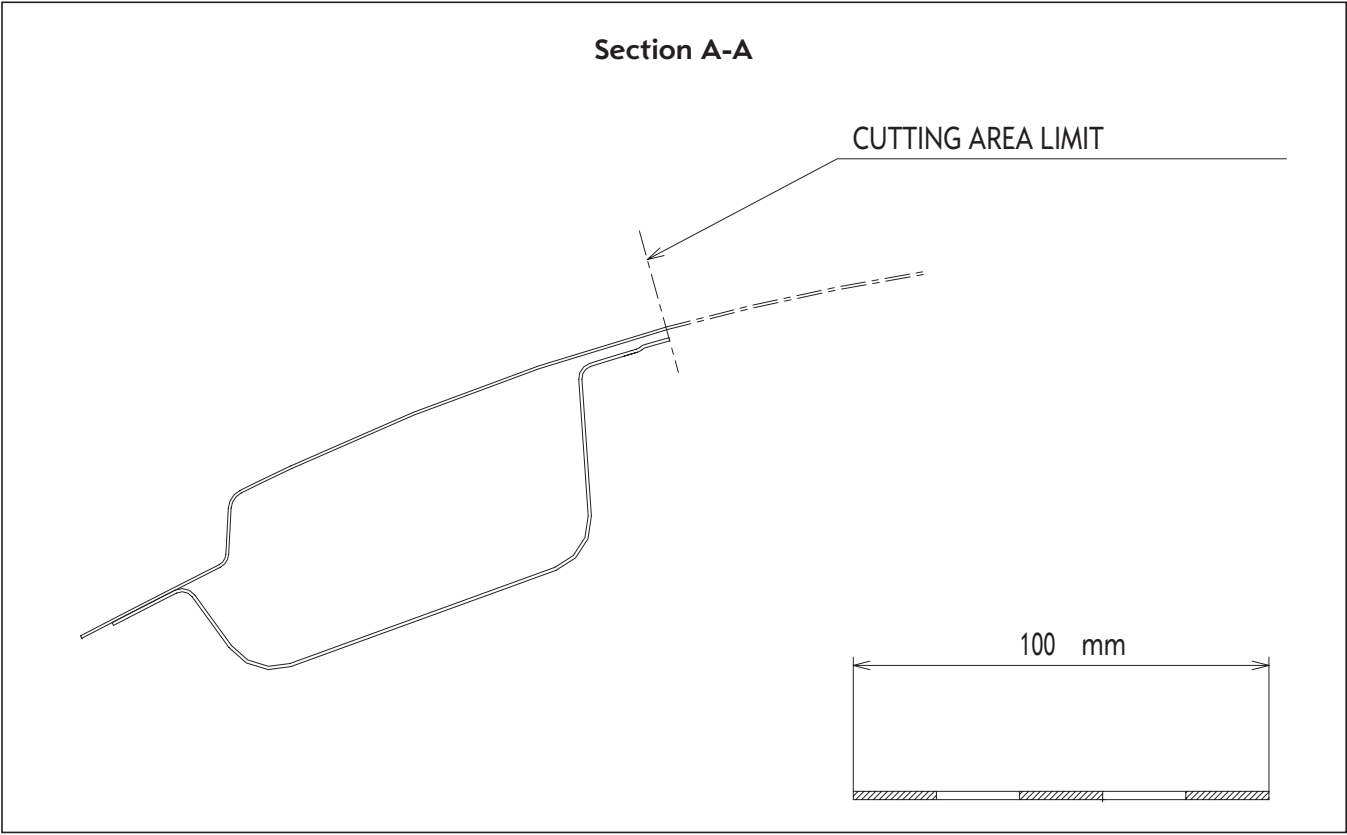
The roof can be cutout as shown in the drawing.

Body cutouts and/or additional structures must comply with the regulations pertaining to seat belt anchor points (ECE 14 or applicable local legal regulations).





# Roof cutout (H1)



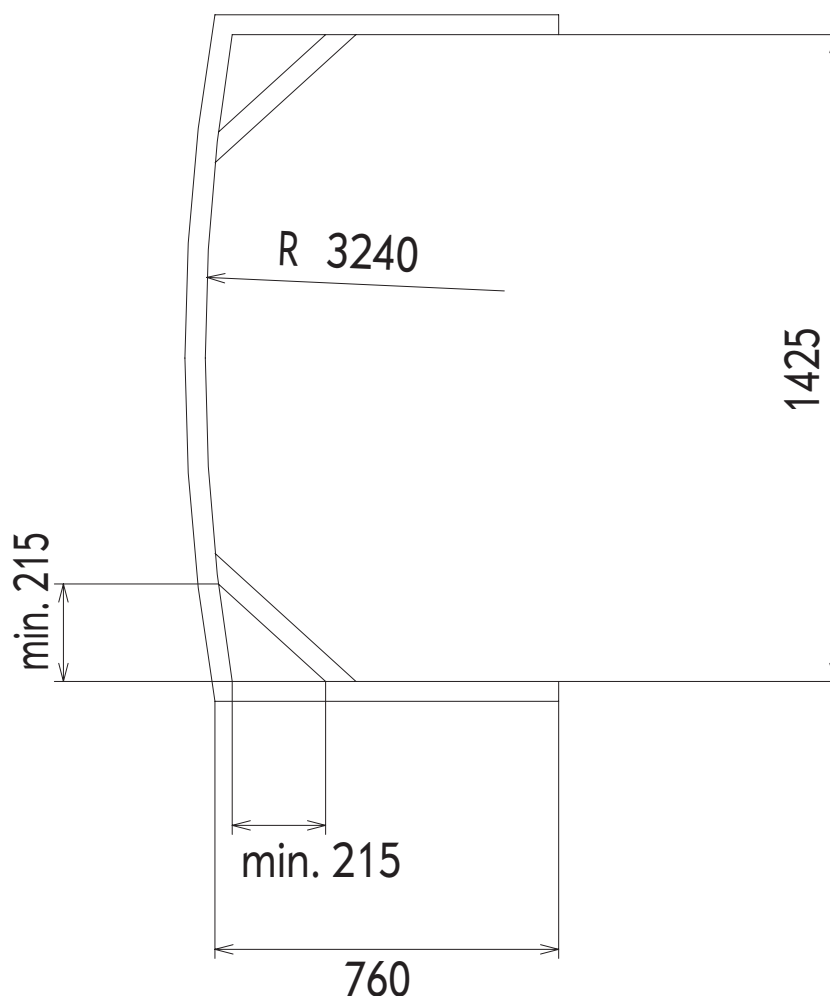


- **Structural reinforcements following roof cutout for platform chassis**

When a platform chassis roof is cut out, the structure requires reinforcement in order to ensure compliance with the ECE 14 standard – rigidity of seatbelt installation points.

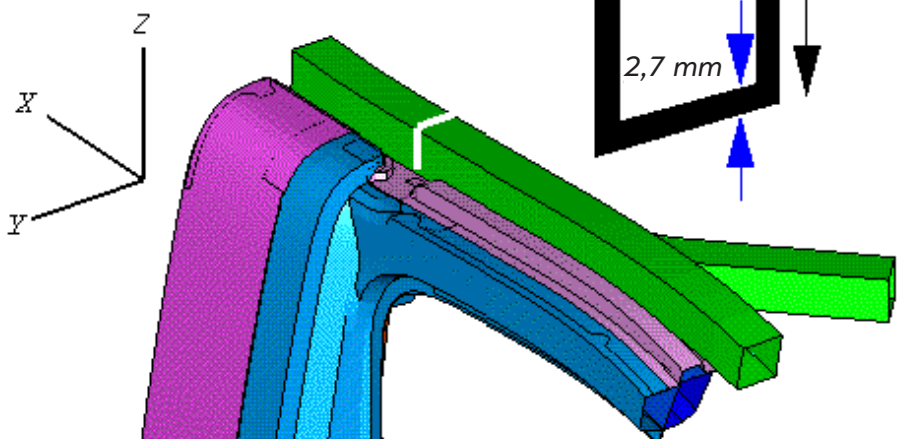
The reinforcement consists of an cab surround frame (45 x 45 mm steel square-section tube, 2.7 mm thick). This frame is attached using M10 bolts. The distance between the bolts is 200 mm, with the exception of the centre pillar. The centre pillar is additionally bolted to the cross strut to provide additional reinforcement (picture below).

See also paragraph “Van roof cutout”

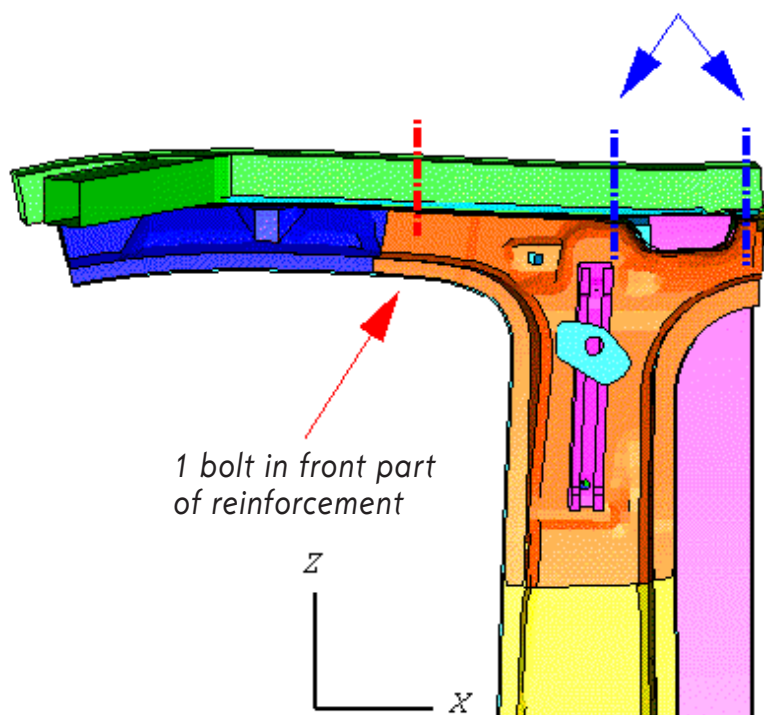




**Square-section reinforcement tube:**



**Position of bolts:** 1 bolt on each sides of reinforcement



1 bolt in front part of reinforcement



- **Van roof cutout**

Brief information regarding the position of the cutout and the operations to be performed are given below.

The following items must be observed:

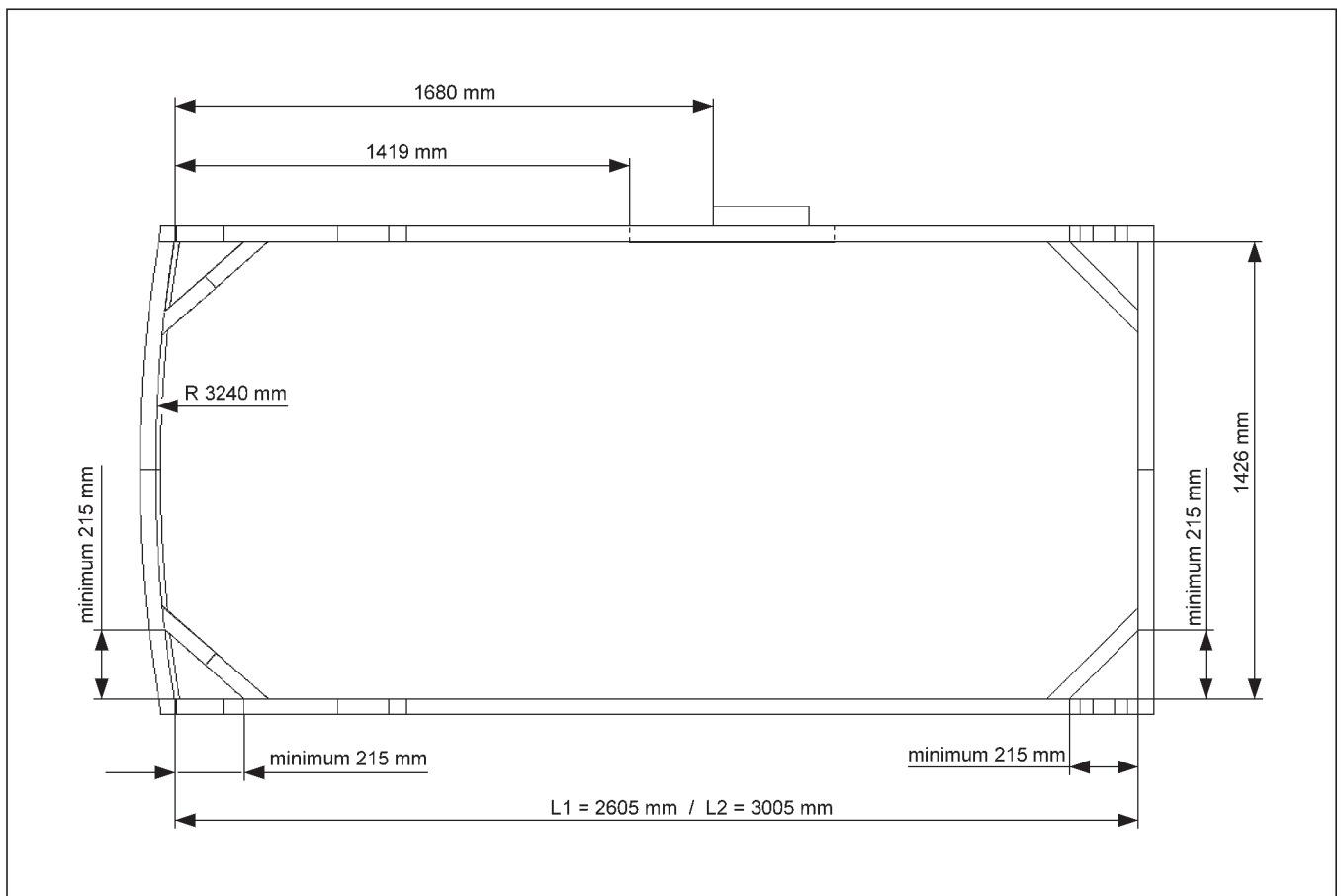
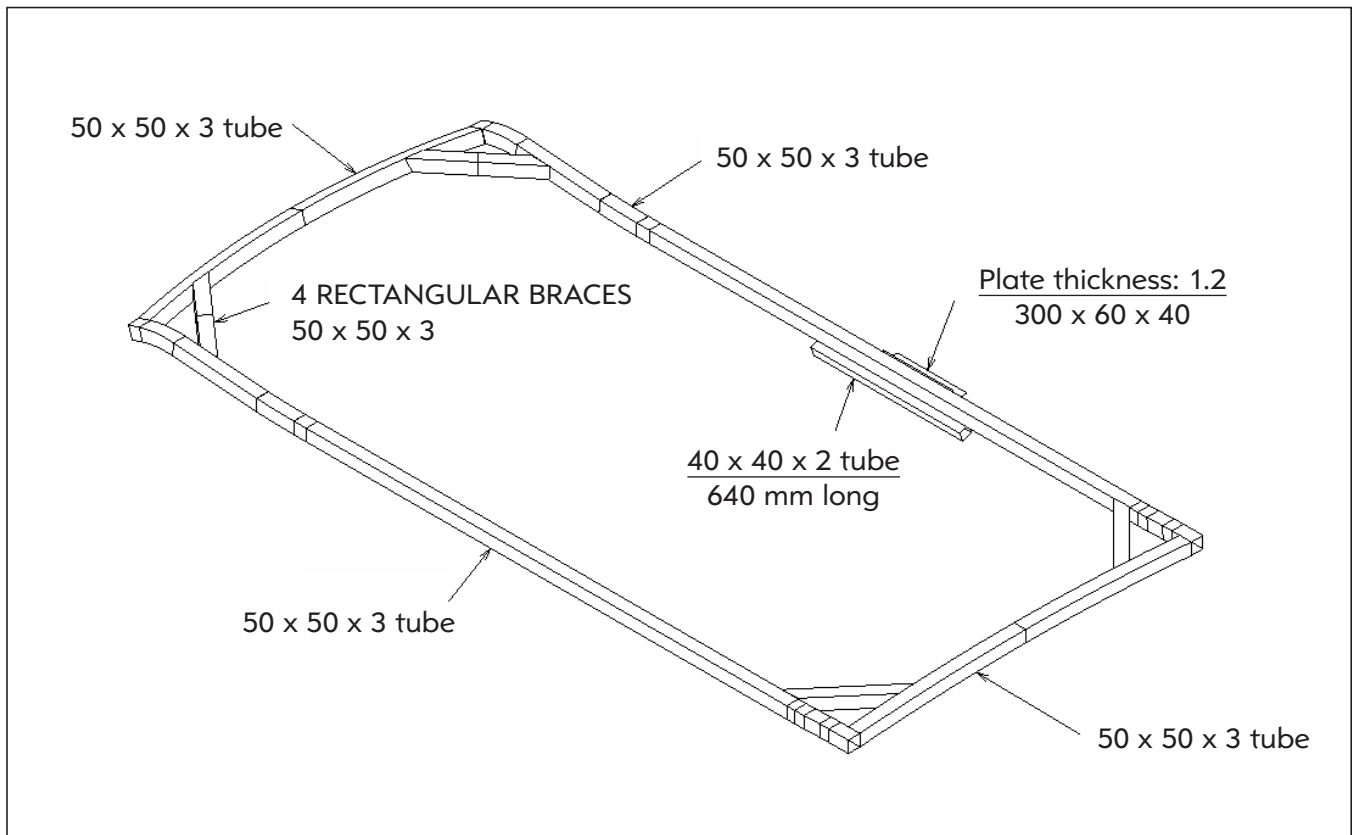
- The roof can also be cutout in accordance with the instructions below.
- If roof cutouts are to be made, the vehicle converter must ensure that structural reinforcement is installed in order to ensure that the roof strength fulfils the requirements of ECE standard 14.

**Body cutouts and/or additional structures must comply with the regulations pertaining to seat belt anchor points (ECE 14 or corresponding local regulations).**

The strut must be installed as follows:

- A 50 x 50 x 3 mm square-section tube is to be fixed along the roof cutout using M10 bolts at distances of 200 mm. This rectangular tube helps to achieve a strength comparable to that of the reference vehicle, except at the C pillar on the side with the side sliding door. At the B-pillar, the rectangular tube is fixed with three screws in the area of the shoulder belt struts (see also paragraph “roof cutout platform chassis”).
- In the area of the C pillar on the side with the side sliding door, a second square-section tube (40 x 40 x 2 mm square-section, 640 mm long) is to be welded to the lining of the right-hand roof strut using two weld seams. The tube is positioned in the extension of the upper rail of the sliding door. The maximum permissible dimensions are 40 x 40 x 2 mm (if these dimensions are exceeded it is not possible to guarantee weldability).
- In the area of the C pillar at the end of the side sliding door, an angle sheet (60 x 40 x 1.2 mm, 300 mm long) is to be welded to the 50 x 50 x 3 mm square-section tube and the front right-hand body panel/cantrial.





Technical drawing of a cable assembly with the following dimensions and radii:

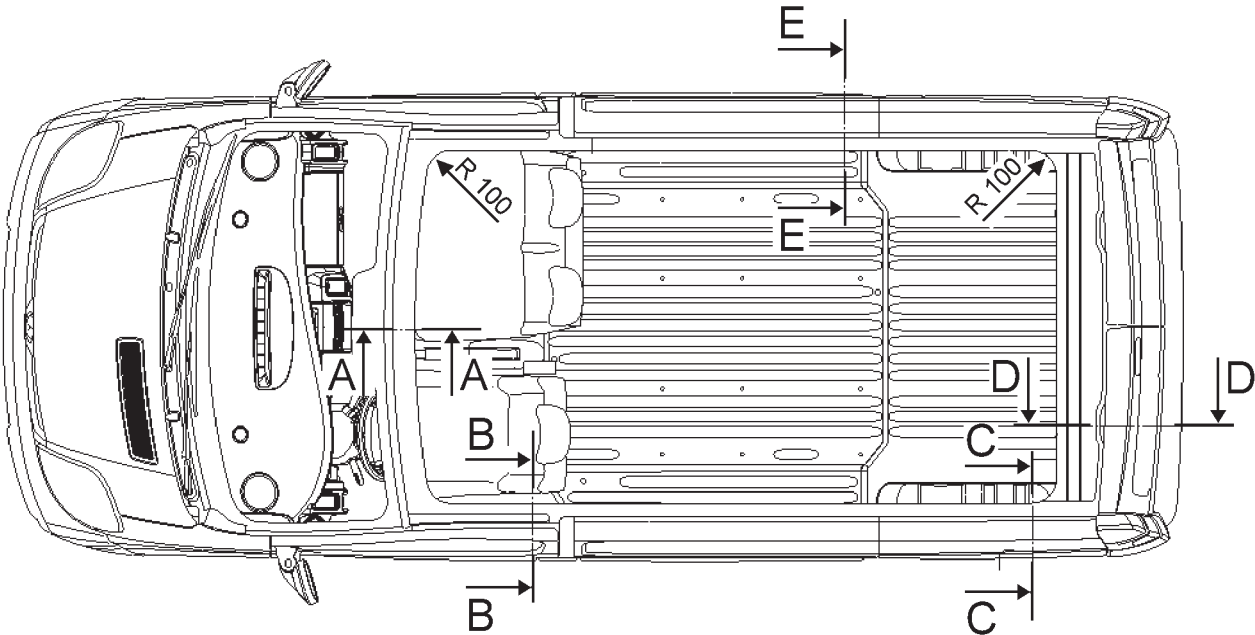
- Overall length:  $L1 = 2703$  /  $L2 = 3103$  mm
- Top left vertical dimension: 38,9 mm
- Top left horizontal dimension: 124 mm
- Top left horizontal dimension: 625 mm
- Left side vertical dimension: 1,1 mm
- Radius: R 450 mm
- Radius: R 3000 mm
- Radius: R 1000 mm
- Radius: R 1000 mm
- Top right horizontal dimension: 211,4 mm
- Top right horizontal dimension: 103,6 mm
- Right side vertical dimension: 4,4 mm
- Bottom left horizontal dimension: 364 mm
- Text: "Absolutely necessary dimension for the installation"
- Bottom right horizontal dimension: 265 mm
- Text: "Absolutely necessary dimension for the installation"

A diagram showing a rectangular area with a width of 1426. A line segment of length 10700 is drawn from the bottom-left corner to the top-right corner, forming a right triangle with the width. The angle between the width and the hypotenuse is labeled R 10700.

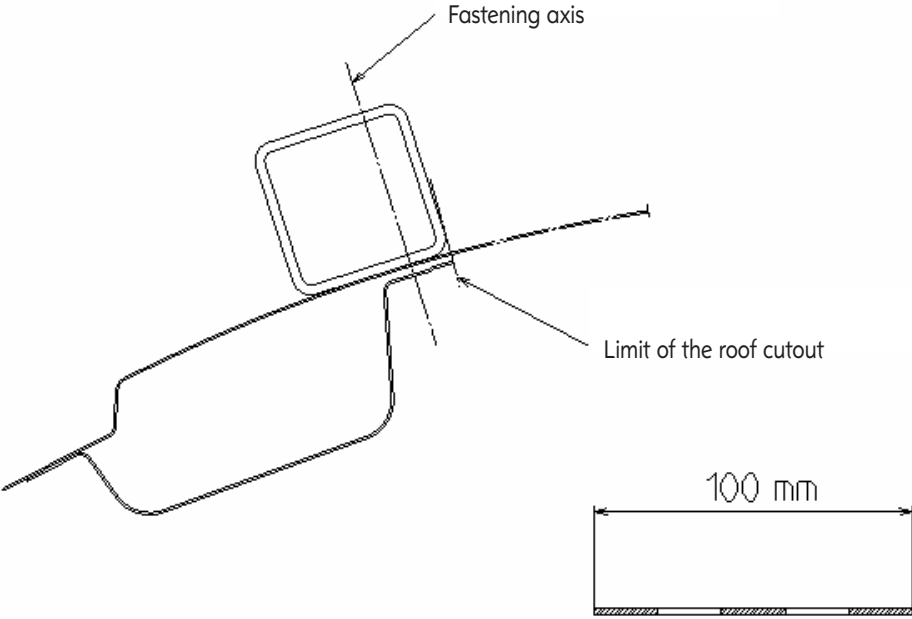
Diagram illustrating a roof section with a horizontal line and a vertical line segment labeled  $R\ 8700$ . A horizontal dimension line below the section is labeled  $1426$ .



Roof cutout

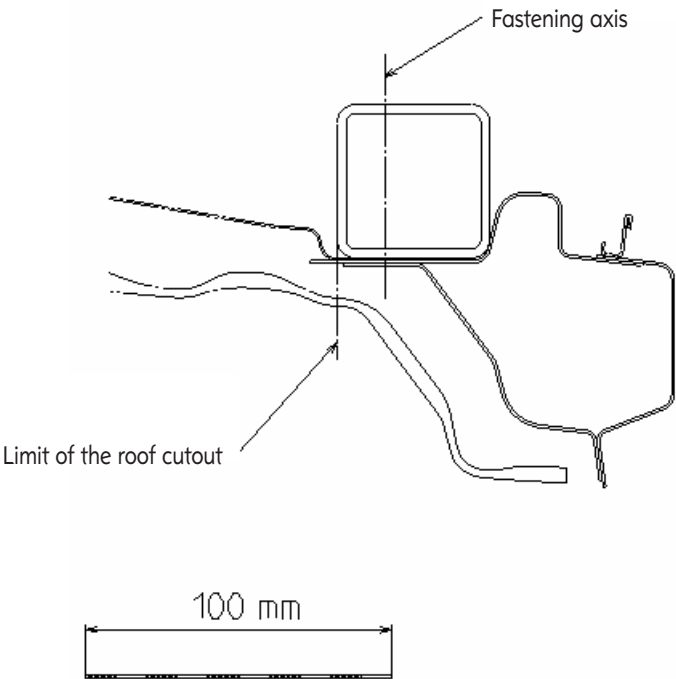


Section A-A

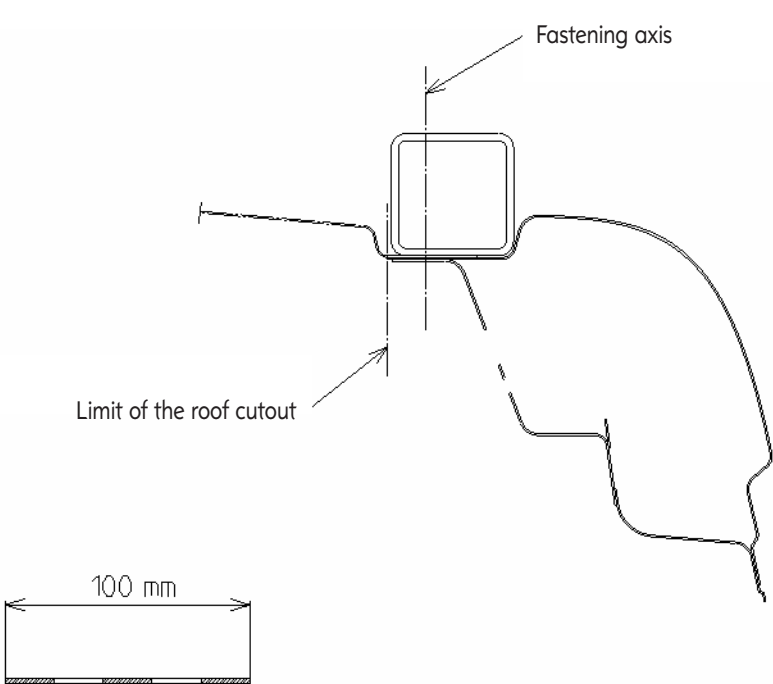




**Section B-B**

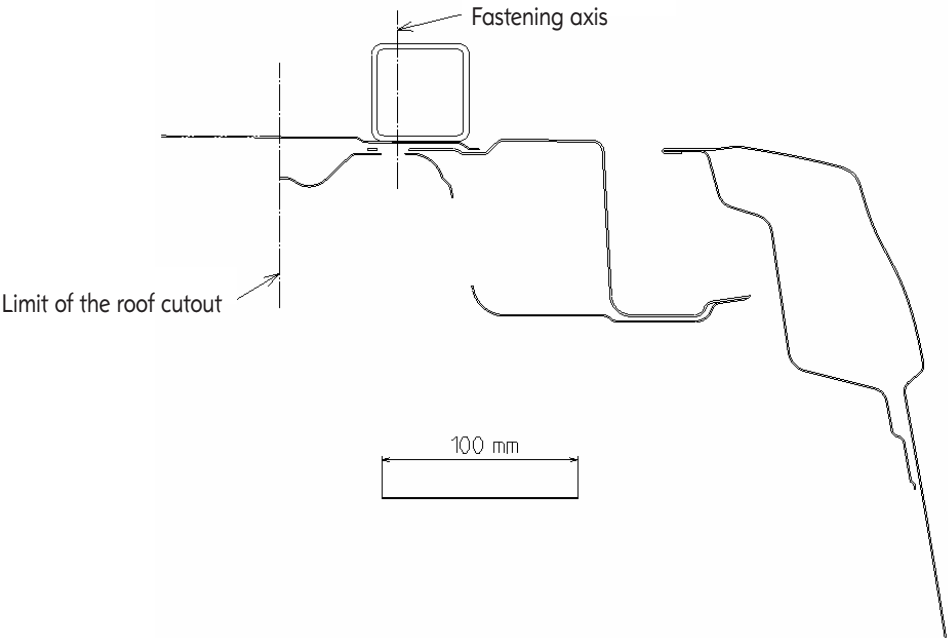


**Section C-C**

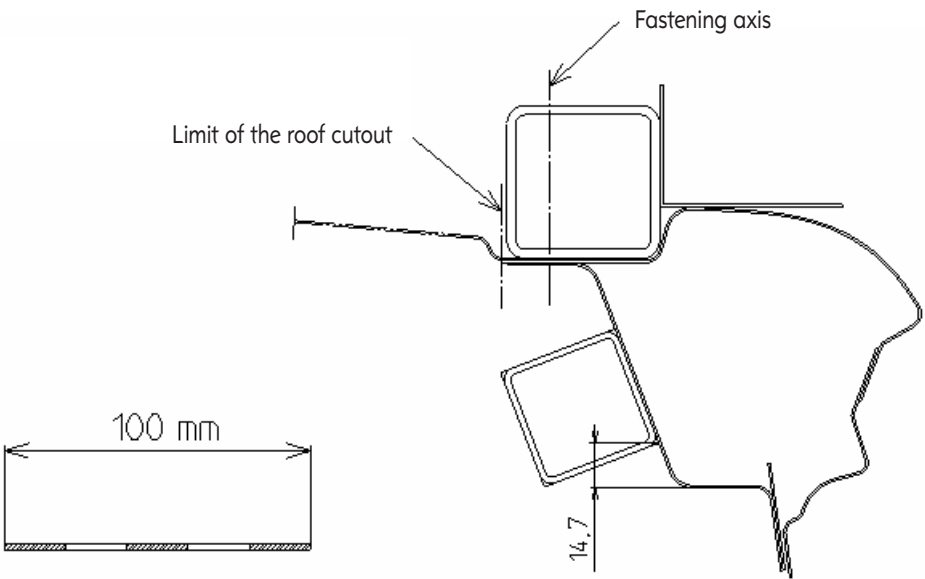




Section D-D



Section E-E





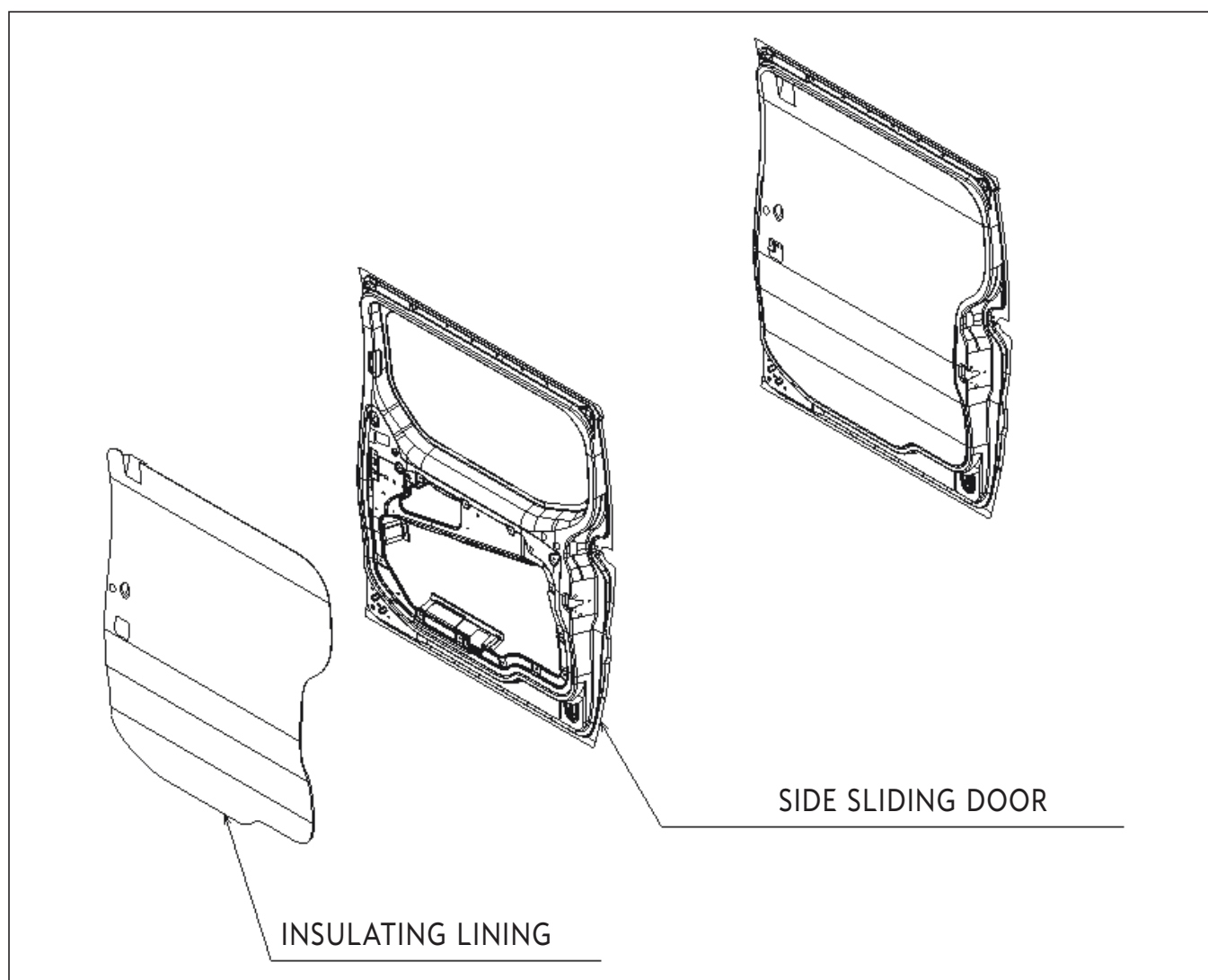
- **Insulated lining of the side sliding door (isothermal and refrigerated vehicles)**

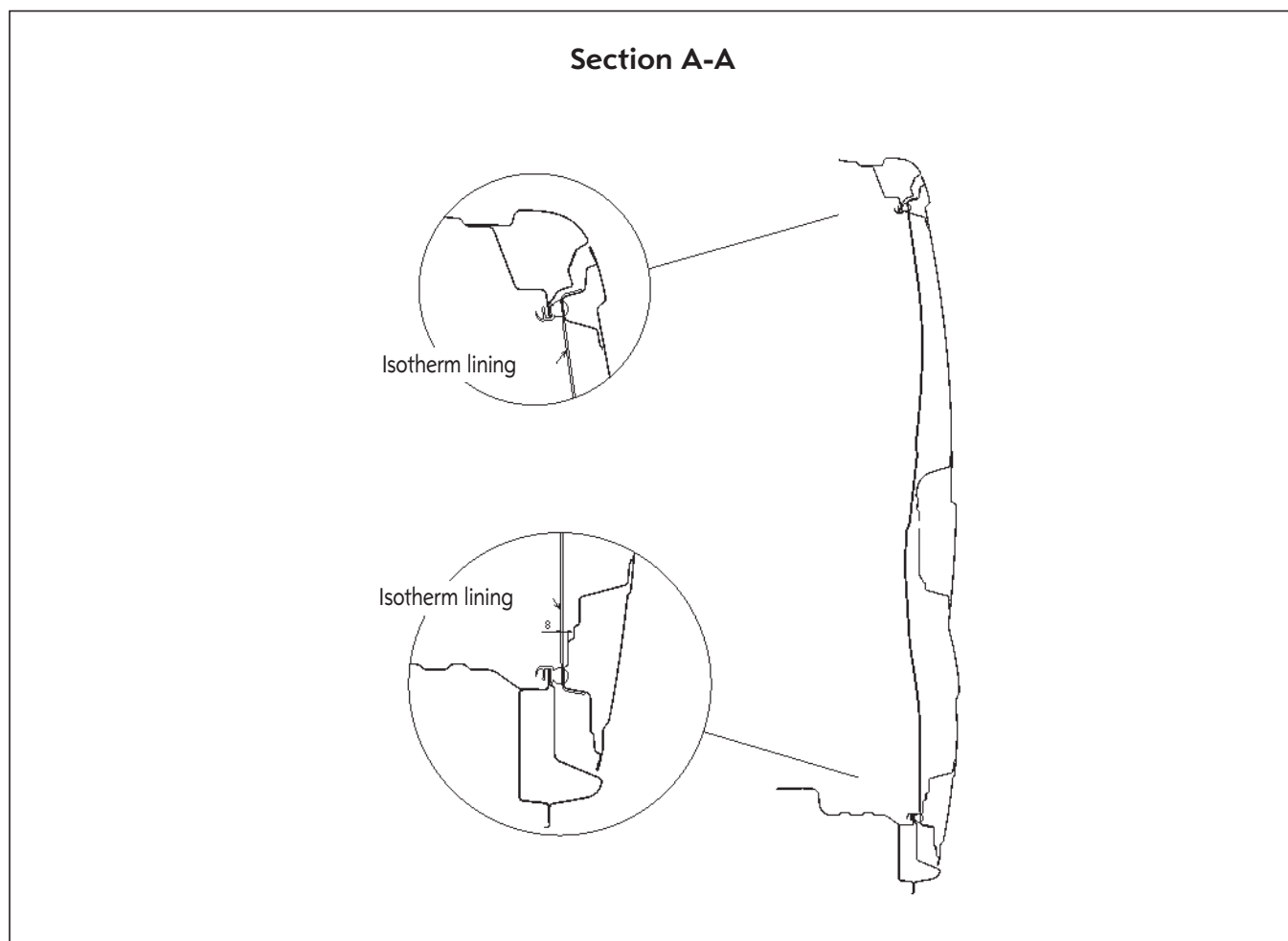
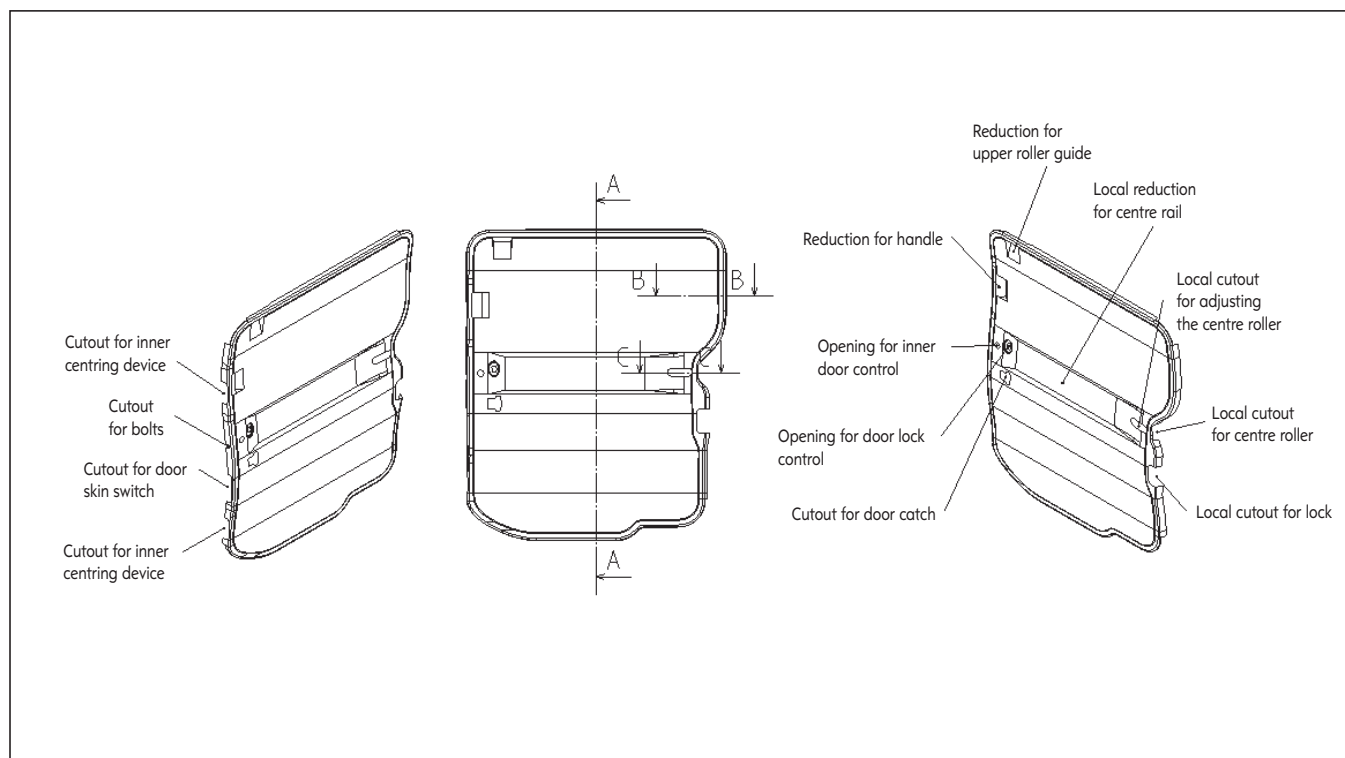
A study has been conducted on the installation of an insulated lining for the side sliding door of the van version. This study only takes into account the altered shape, but not the additional weight. Consequently, it must be checked whether the installation is compatible with maximum permissible loads for rails, rollers and trolleys of sliding door.

To avoid the risk of faulty operation following reinstallation, the door should not be removed.

The lining should be adapted on installed sliding door, in order to ensure smooth running over the centre rail along the side panelling.

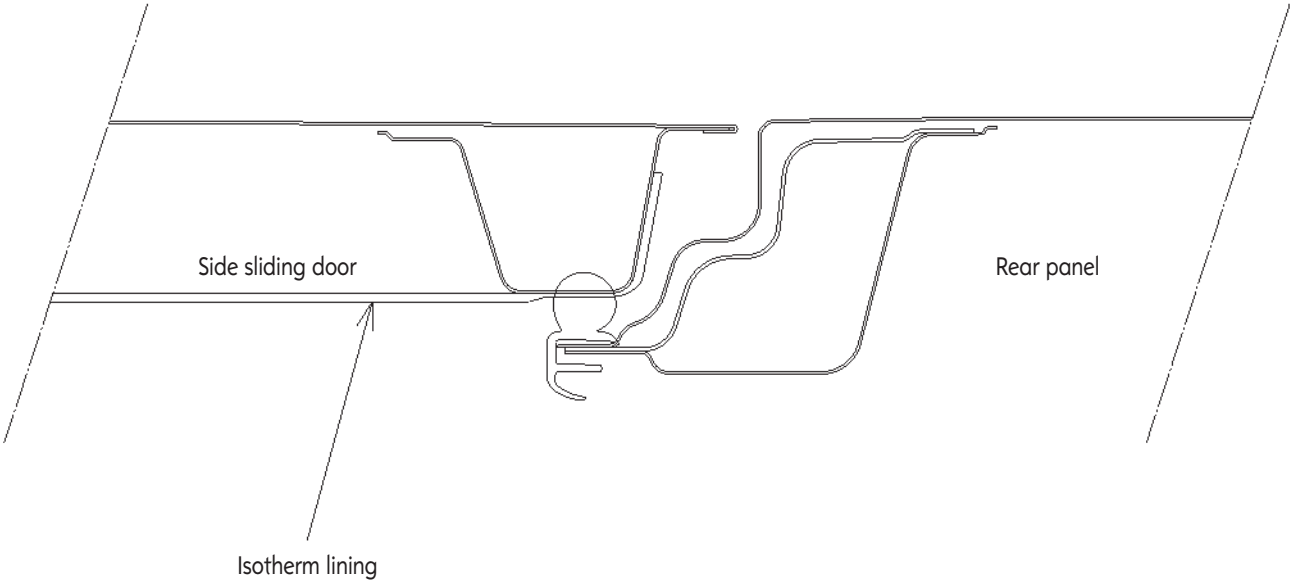
- Leave a clearance of at least 30 mm between the moving parts of the door to take account of the possible adjustments.
- Provide for access to the attachment screws for removal and adjustment.
- No fitting should come in contact with the internal part of the door seal (minimum clearance 3 mm).
- The weight of the equipment and lining added to the door should not have the effect of increasing the weight of the door to more than 40–42 kg (The weight of the side sliding door with sheet metal but without trim is 29.4 kg.)
- If this door leads to a stowage compartment (such as vertain ambulances) a breathing area should be adapted with the interior of the vehicle, both cell and cab. The air passage section should allow for closing the door without having to increase its speed with respect to the initial configuration.
- Care should be exercised in adding any elements between the door and the door seal. If the door seal is too compressed, its lifetime will be reduced and the door may become difficult to close.



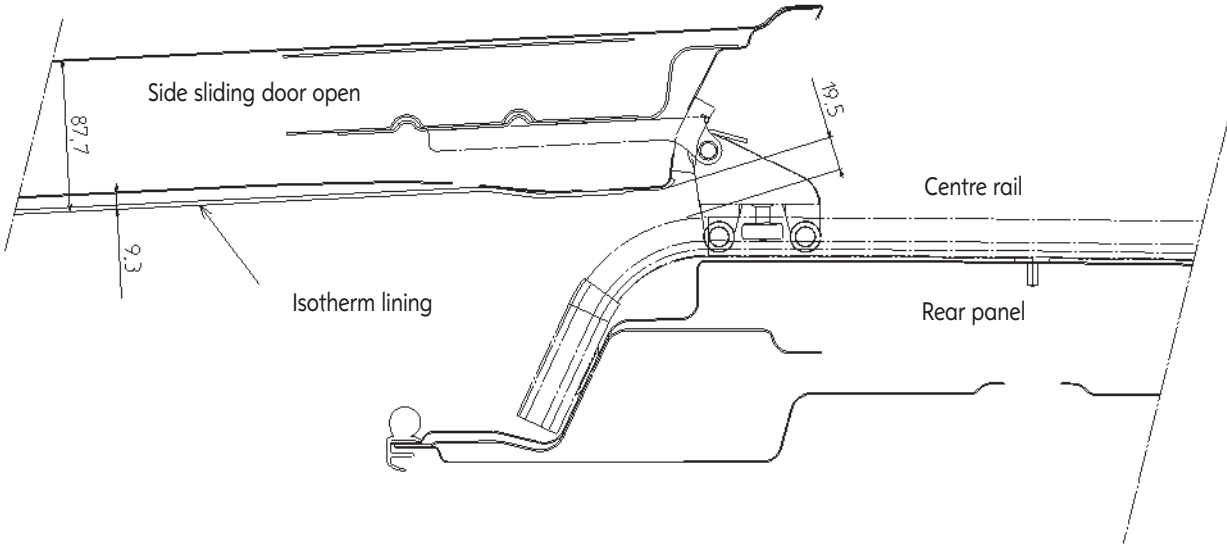




Section B-B



Section C-C





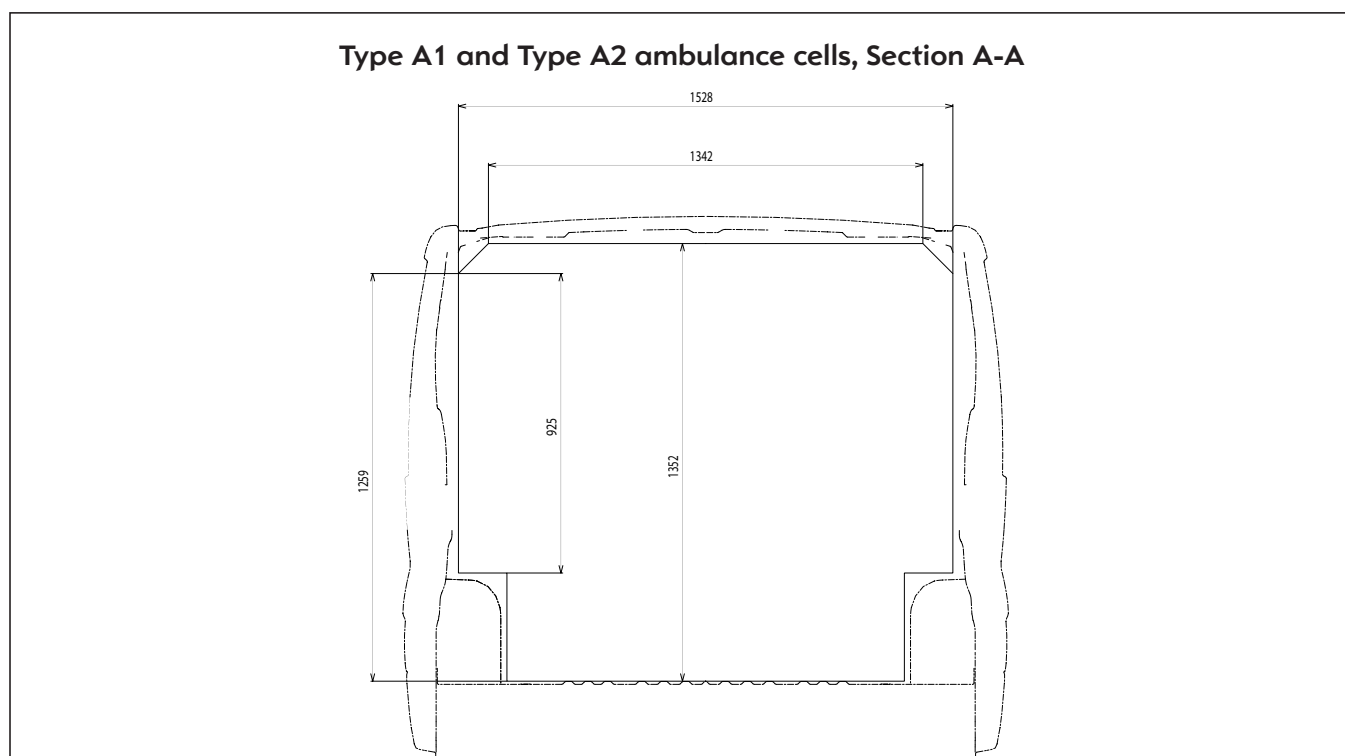
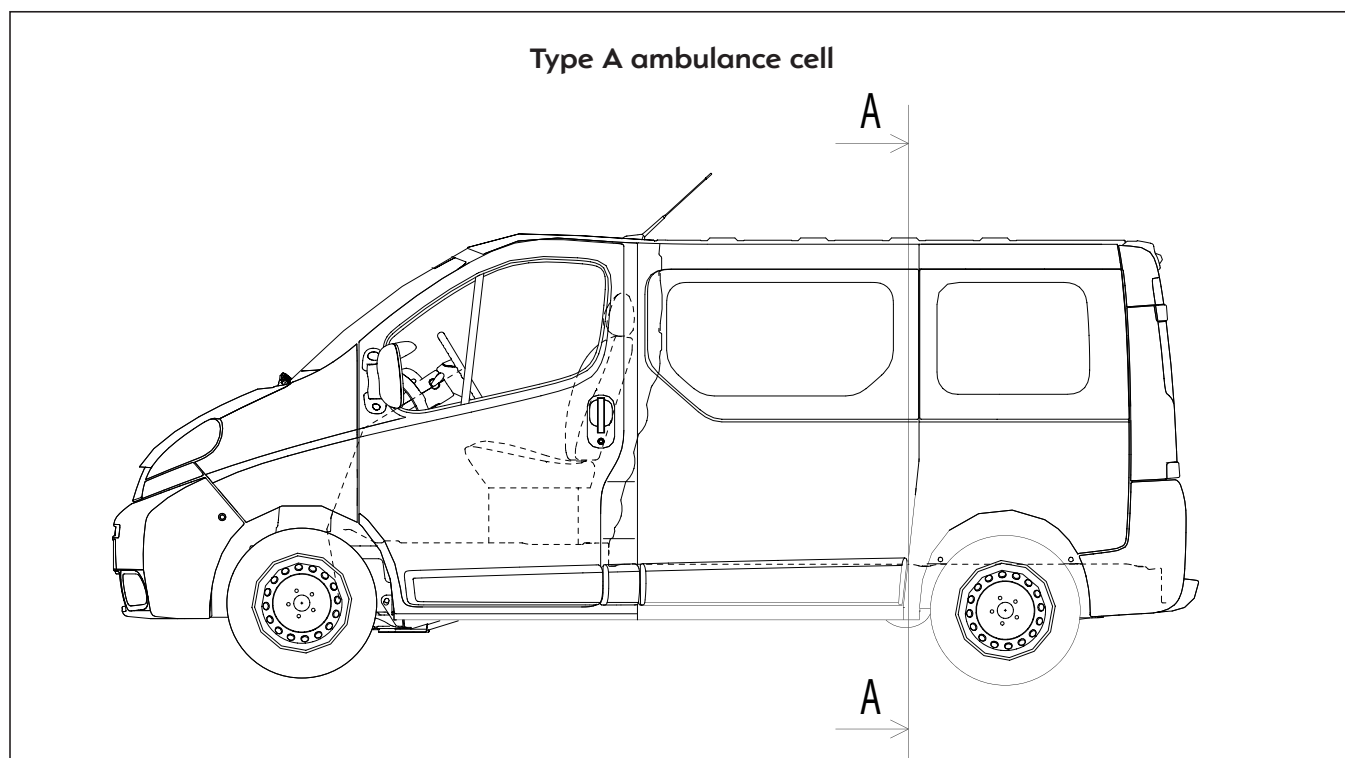


- **Special regulations for ambulance vehicles**

The L1H1 version of the van is designed to accommodate a Type A1 ambulance cell in accordance with EN 1789.

The L2H1 version of the van is designed to accommodate a Type A2 ambulance cell in accordance with EN 1789.

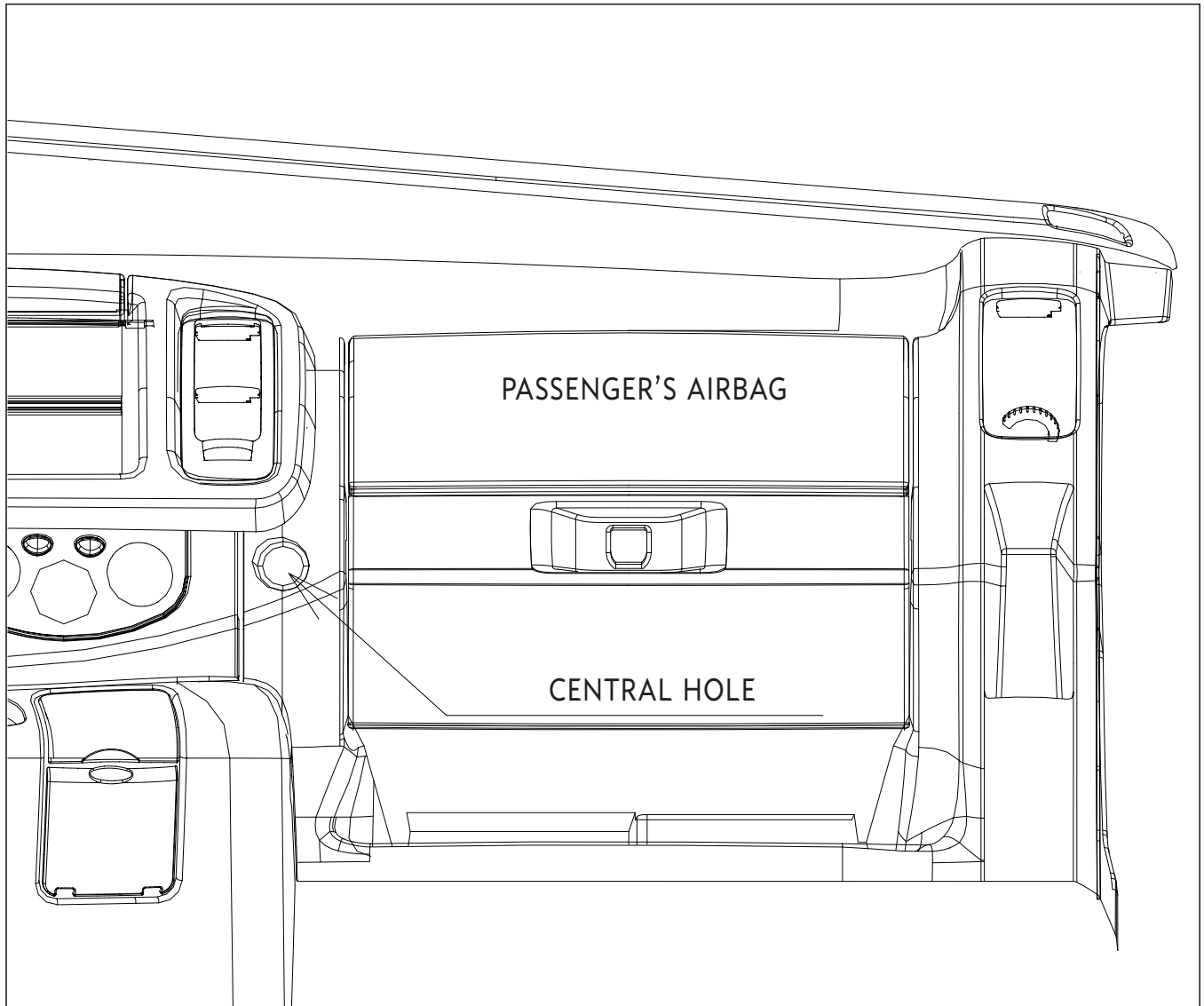
The rear doors should be equipped with an inside handle. On a tailgate an inner handle is standard.





- **Battery cutoff switch**

A battery cutoff switch can be installed into the installation aperture opposite the cigarette lighter.



Installation is only permissible at the designated location.